

GRUNDIG

TVR-3805

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character. Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a Δ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.

Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not to modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the external exposure metal [Note 2] should be more than 1M ohm by using the 500V insulation resistance meter [Note 1].
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone Jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER

The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.

2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

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GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size	14 inch / 335.4mmV
			CRT Type	Normal
	Color System	Deflection	90 degree	
		Magnetic Field	+0.45G / +0.18G	
	Speaker	Position	BV/BH	
		Size	1.5 x 2.5 inch	
	Sound Output	Impedance	8 ohm	
		MAX	1.5 W	
	VCR System	10%(Typical)	1.0 W	
			VHS Player / Recorder	
	Video System	Hi-Fi STEREO	PAL	No
		NTSC PB(PAL 60Hz)	Yes	
	Deck	DECK	OVD-7	
		Loading System	Front	
	Heads	Video Head	3	
		FM Audio Head	2Head	
	Audio /Control	Erase(Full Track Erase)	No	
		Rec	Mono /Yes	
	Tape Speed	Rec	Yes	
		Play	SP	
	Fast Forward / Rewind Time (Approx.)	NTSC	SP	
		with Cassette	NTSC	
	Forward/Reverse	NTSC or PAL-M	FF:2'05"/REW:2'05"	
		PAL or SECAM	at E-180	
	Picture Search	SP=3x,5x	SP=5x,7x	
		Frame Advance	1/10	
	Slow Speed	1/10	1/5-1/30	
G-3	Tuning System	Broadcasting System	CCIR + Italy System B/G	
		Tuner and	1Tuner	
	Receive CH	System	Oscar(W/HYPER)	
		Destination	F-Synth	
	Intermediate	Tuning System	VHF/UHF 75 ohm	
		Input Impedance	E2-E4, X-Z+2, S1-S10,	
	Frequency	CH Coverage	E5-E12,S11-S41,E21-E69	
		Picture(FP)	38.9MHz	
	Preset CH	Sound(FS)	33.4MHz	
		FP-FS	5.5MHz	
	Stereo/Dual TV Sound	80CH	No	
		Tuner Sound Muting	Yes	
G-4	Signal	Video Signal	Input Level	1 V p-p/75 ohm
			Output Level	1 V p-p/75 ohm
			S/N Ratio (Weighted)	53 dB
			Horizontal Resolution at SP Mode	240 Lines
	Audio Signal	Input Level	-3.8dBm/50Kohm	
		Output Level	-3.8dBm/1Kohm	
		S/N Ratio at SP (Weighted)	42 dB	
		Harmonic Distortion at SP (1KHz)	Typical 1.5 %	
		Frequency Response	at SP 100Hz ~10kHz	
			at LP -	
	Hi-Fi Audio Signal	Dynamic Range : More than	-	
		Wow And Flutter : Less than	-	
		Channel Separation : More than	-	
		Harmonic Distortion : Less than	-	
G-5	Power	Power Source	AC	230V 50Hz
		DC		
	Power Consumption	Stand by (at AC)	50 W at 230 V 50 Hz	
		Per Year	8 W at 230 V 50 Hz	
	Protector	Power Fuse	Yes	
		Dew Sensor	No	
G-6	Regulation	Safety	CE	
		Radiation	CE	
	Temperature	X-Radiation	-	
		Operation	+5°C ~ +40°C	
G-8	Operating Humidity	Storage	-20°C ~ +60°C	
			Less than 80% RH	

GENERAL SPECIFICATIONS

G-9	On Screen Display	Menu	Menu Type	Yes Character
		ATS		No
	Timer Rec Set	Channel Setup	Auto Tuning	Yes
		Ch Mapping	Ch Tuning	No
	TV Setup	Ch Allocation	Ch Allocation	Yes
		On/Off Timer Set	Picture	Yes
	VCR Setup	Audio	Audio	No
		Auto Repeat On/Off	System Select	Yes
	System Setup	Scene Repeat	Scene Repeat	No
		Clock Set	Yes (Calendar 24h)	
	G-CODE(or SHOWVIEW or PLUSCODE)No. Entry	Language	Yes	
		Stereo/Audio Output	No	
	Bilingual	NICAM	No	
			No	
	Clock/Date	CH/AV	Yes	
		Tape Counter(Linear Counter)	Yes	
	Tape Speed	Sleep Time	No	
		Control	Volume	Yes
	Level	Bright/Contrast/Sharpness/Color	Yes	
		Tint	No	
	Manual Tracking	Base/Treble/Balance	No	
		Play/Stop/FF/Rew/Rec/OTR/T-Rec/Pause/Eject/Tape In (Symbol Mark)	Yes	
	Auto Tracking/Manual Tracking	S-Repeat/SR-R/SR-PLAY	Yes	
		Index	No	
	Mute	Hi-Fi	Yes	
		Repeat	No	
	Zero Return	Dew	No	
			No	
G-10	OSD Language	OSD Language Setting	Eng Ger Fre Spa Ita	
G-11	Clock,Timer and Timer Back-up	Calendar	1990/1/1 ~ 2081/12/31	
		Timer Events	8 prog/ 1 month	
	One Touch Recording	Max Time	SP 5 Hours	
		OTPB Valid Time	-	
	Sleep Timer	Max Time	120 min.	
		Step	10 min.	
	On/Off Timer	Program(On Tim / Off Tim)	1 prog.	
		Auto Shut Off	15 min.	
	Timer Back-up (at Power Off Mode)	No Signal	- min.	
		No Operation	30 min.	
G-12	Remote Control	Unit	RC-CH	
		Glow in Dark Remocon	No	
	Power Source	Voltage(D.C)	3V	
		UM size x pcs	UM-4 x 2 pcs	
	Total Keys	Keys	36	Keys
		Power	Yes	
	Keys	1	Yes	
		2	Yes	
		3	Yes	
		4	Yes	
		5	Yes	
		6	Yes	
		7	Yes	
		8	Yes	
		9	Yes	
		0/AV	Yes	
	CH/Tr Up	CH/Tr Up/Page Up	No	
		CH/Tr Down	No	
	CH/Tr Down /Page Down	Volume Up	Yes	
		Volume Down	Yes	

GENERAL SPECIFICATIONS

G-13	Features	Play/Up		Yes	No		
		Play/Up/Slow		Yes			
		F.Fwd/Right		Yes			
		Rew/Left		Yes			
		Pause/Still		Yes			
		Pause			No		
		Stop/Down		Yes			
		Rec/OTR		Yes			
		Eject		Yes			
		Counter Reset		Yes			
		Speed			No		
		Timer Rec		Yes			
		TV Monitor		Yes			
		TV Monitor /Rec Monitor			No		
		Program		Yes			
		Program /V+			No		
		Auto Tracking			No.		
		Auto Tracking /Reveal		Yes			
		Menu		Yes			
		Enter			No.		
		Enter/Hold		Yes			
		Cancel/Ch Skip			No.		
		Cancel/Ch Skip/F-T-B		Yes			
		Index			No.		
		Index /Sub Page		Yes			
		Call		Yes			
		Text/Mix/TV		Yes			
		Sleep Timer		Yes			
		Mute		Yes			
		Zero Return		Yes			
		CM Skip			No		
		OTPB			No		
		END Call			No		
		Red			No		
		Cyan			No		
		Green			No		
		Yellow			No		
		Audio Select			No		
		G-13	Features	Auto Head Cleaning		Yes	
				Auto Tracking		Yes	
				HQ (VHS Standard High Quality)		Yes	
				Auto Power On, Auto Play, Auto Rewind, Auto Eject		Yes	
				Auto Shut Off		Yes	
				Auto Repeat		Yes	
				VIDEO PLUS+(SHOW/VIEW,G-CODE)			No
				CH Auto Set-Up/Auto Clock			No
				Forward / Reverse Picture Search		Yes	
One Touch Playback					No		
Auto Tuning				Yes			
Anti-Theft					No		
End Call					No		
Index Search				Yes			
SQPB					No		
CATV					No		
CM Skip(30sec x 6 Times)					No		
Comb Filter					No		
T-Text				Yes			
	Text type			UNI Text			
Scene Repeat					No		
Hotel Lock					No		
TV Monitor				Yes			
Choke Coil					No		
G-14	Accessories			Owner's Manual	Language	Italian	
					w/Guarantee Card		No.
				Remote Control Unit		Yes	
				Rod Antenna			No
					Poles	-	
					Terminal	-	
					w/300 ohm to 75 ohm Antenna Adapter	-	
				Loop Antenna			No
					Terminal	-	
		U/V Mixer			No		
		DC Car Cord (Center+)			No		
		Guarantee Card		Yes			
		Warning Sheet			No		
		Circuit Diagram			No		
Antenna Change Plug			No				

A3-3

GENERAL SPECIFICATIONS

					Service Facility List	No				
					Important Safeguard	No				
					Dew/AHC Caution Sheet	No				
					AC Plug Adapter	No				
					Quick Set-up Sheet	No				
					Battery	Yes				
					UM size x pcs	UM-4 x 2 pcs				
					AC Cord	No				
					AV Cord (2Pin-1Pin)	No				
					21pin-RCA Cable	No				
					Registration Card	No				
					PTB Sheet	No				
					Anti-Theft Sheet	No				
					Euro Warranty Information Sheet	No				
					G-15	Interface	Switch	Front	Power	Yes
									Play	Yes
									Pause/Still	No
									System Select	No
									One Touch Playback	No
									Channel Up	Yes
Channel Down	Yes									
F.FWD/Cue	Yes									
Eject/Stop	Yes									
Main Power SW	Yes									
Volume Up	Yes									
Volume Down	Yes									
Rew/Rev	Yes									
Rec/OTR	Yes									
Rear	Indicator	Main Power SW	No							
		Standby	Red							
		Rec/OTR	Red							
		T-Rec	Red							
		On Timer	No							
		CS	No							
		Key Light up		Rec/OTR	No					
				One Touch Playback	No					
				Play	No					
				Terminals	Front	Video Input	RCA x1			
						Audio Input	RCA x1			
						Other Terminal	Head Phone(Stereo & Mono, 3.5mm)			
						Rear		Video Input	No	
								Audio Input	No	
								Video Output	No	
								Audio Output	No	
								Euro Scart	1-SCART	
								Diversity	No	
								Ext Speaker	No	
								DC Jack 12V(Center +)	No	
VHF/UHF Antenna Input	DIN type									
AC Inlet	No									
G-16	Set Size							Approx. W x D x H (mm)		362 x 378.5 x 382
								G-17	Weight	Net (Approx.)
Gross (Approx.)	12.5 kg (- lbs)									
G-18	Carton							Master Carton	Content	No
		Material	-							
		Dimensions W x D x H(mm)	-							
		Description of Origin	-							
		Gift Box	Content	Yes						
			Material	Double/Brown						
			Dimensions W x D x H(mm)	423 x 447 x 443						
			Design	As per Buyer's						
		Drop Test		Description of Origin	No					
				Natural Dropping At	1 Corner / 3 Edges / 6 Surfaces					
				Height (cm)	62					
				Container Stuffing(40' container)	700 Sets					
G-19	Cabinet Material	Cabinet Front	PS 94HB							
		Cabinet Rear	PS 94HB							
		Jack Panel	PS 94V2							

A3-4

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 6 screws ①.
2. Remove the AC cord from the AC cord hook ②.
3. Remove the Back Cabinet in the direction of arrow.

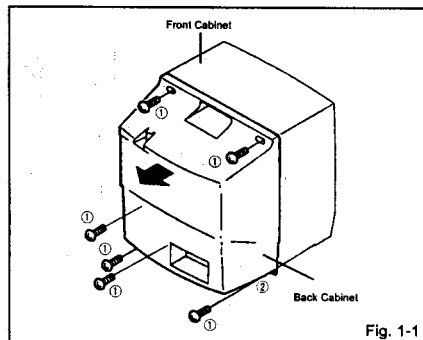


Fig. 1-1

1-2: CRT PCB (Refer to Fig. 1-2)

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1. Remove the Anode Cap.
(Refer to REMOVAL OF ANODE CAP)
2. Remove the CRT PCB in the direction of arrow.

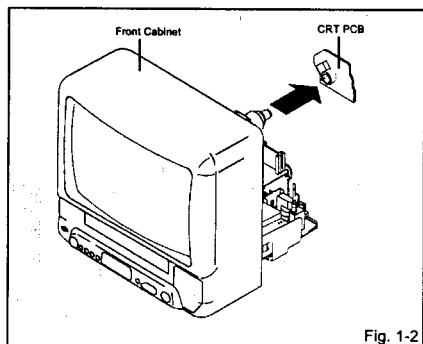


Fig. 1-2

1-3: TV/VCR BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors:
(CP351, CP757, CP401, CP501 and CP502).
3. Unlock the support ②.
4. Remove the TV/VCR Block in the direction of arrow.

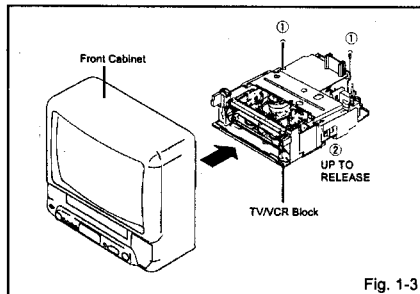


Fig. 1-3

1-4: POWER PCB (Refer to Fig. 1-4)

1. Remove the 3 screws ①.
2. Disconnect the following connectors:
(CP401A and CP851A).
3. Remove the Power PCB in the direction of arrow.

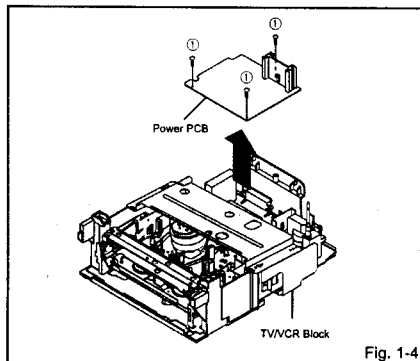


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

1-5: DECK SHIELD PLATE (Refer to Fig. 1-5)

1. Remove the 2 screws ①.
2. Remove the Deck Shield Plate in the direction of arrow (A).
3. Remove the screw ②.
4. Remove the Bottom Shield Plate in the direction of arrow (B).

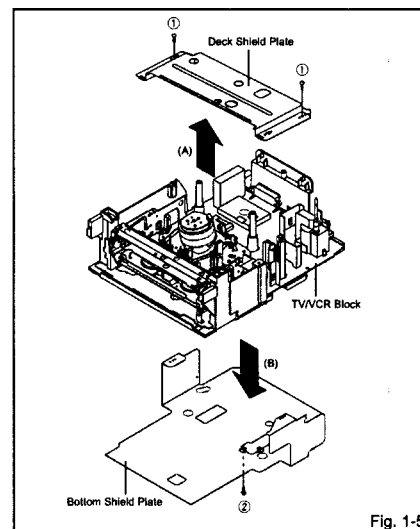


Fig. 1-5

1-6: DECK CHASSIS (Refer to Fig. 1-6)

1. Remove the screw ①.
2. Remove the Cover Light Plate in the direction of arrow (A).
3. Remove the 3 screws ②.
4. Disconnect the following connectors:
(CP1001, CP4001, CP4004 and CP4005).
5. Remove the Deck Chassis in the direction of arrow (B).

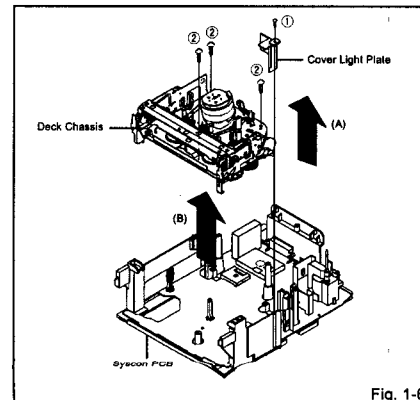


Fig. 1-6

1-7: JACK PLATE AND SYSCON PCB (Refer to Fig. 1-7)

1. Remove the screw ①.
2. Remove the 2 screws ②.
3. Remove the Syscon PCB in the direction of arrow.

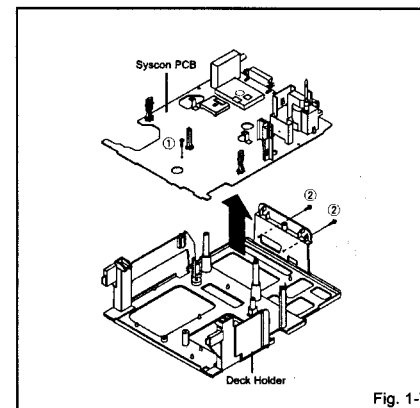


Fig. 1-7

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

1. After the installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.

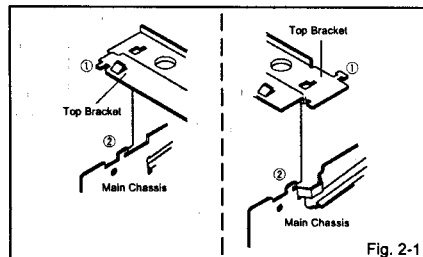


Fig. 2-1

2-2: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

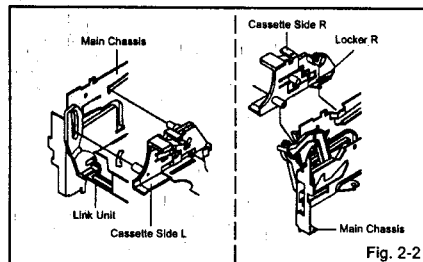


Fig. 2-2

2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.
3. Unlock the support ② and then remove the Locker R.

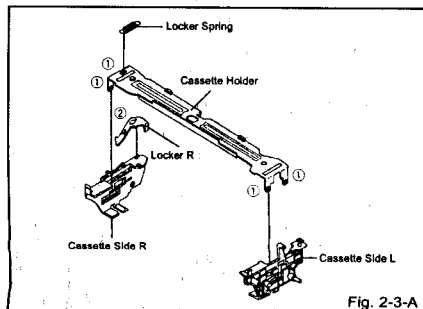


Fig. 2-3-A

NOTE

1. In case of the Locker R installation, check if the two positions of Fig. 2-3-B are correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.

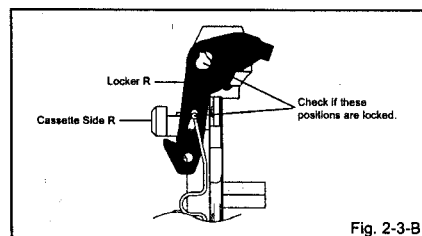


Fig. 2-3-B

2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.

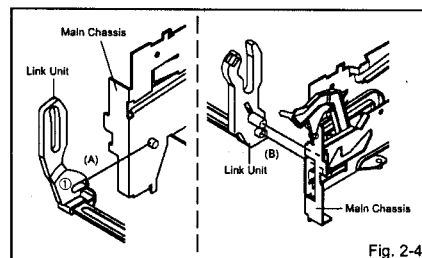


Fig. 2-4

2-5: LINK LEVER/FLAP LEVER (Refer to Fig. 2-5)

1. Remove the Link Lever.
2. Remove the Flap Lever.

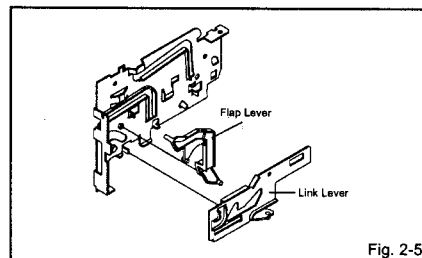


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.

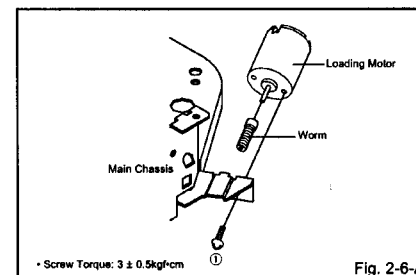


Fig. 2-6-A

NOTE

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.

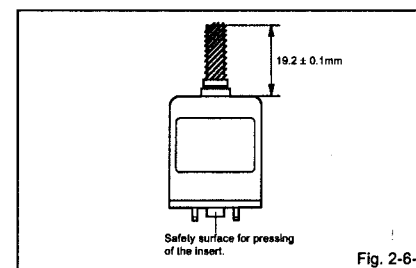


Fig. 2-6-B

2-7: TENSION ASS'Y (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Ass'y.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.

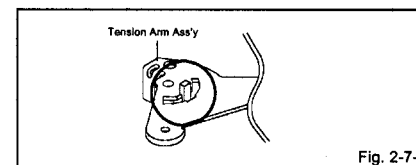


Fig. 2-7-A

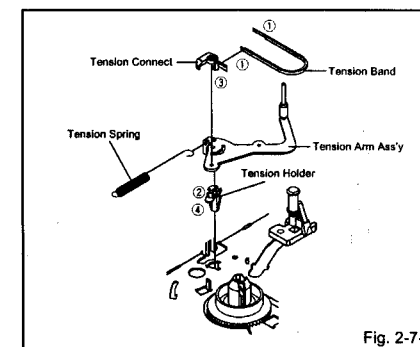


Fig. 2-7-B

NOTE

1. In case of the Tension Band installation, note the direction of the installation. (Refer to Fig. 2-7-C)
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.

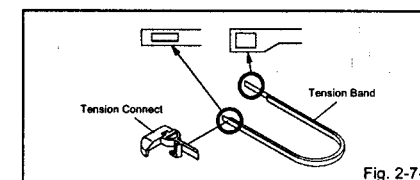


Fig. 2-7-C

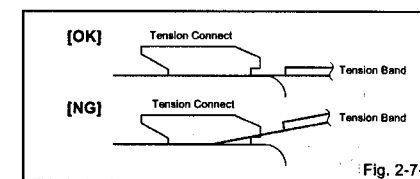


Fig. 2-7-D

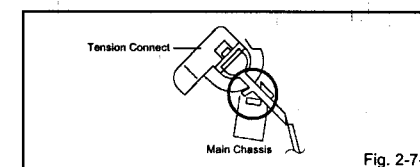


Fig. 2-7-E

DISASSEMBLY INSTRUCTIONS

2-8: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.

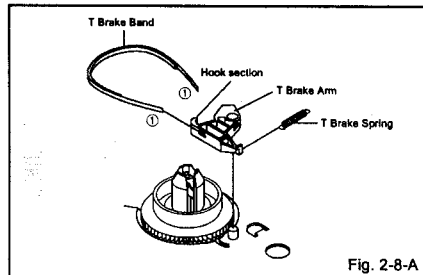


Fig. 2-8-A

NOTE

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

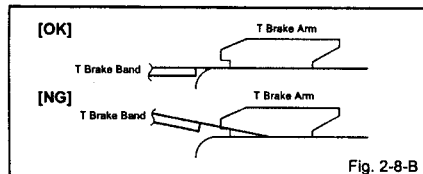


Fig. 2-8-B

2-9: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Ass'y and Idler Gear.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) (Refer to Fig. 2-9-A) Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it (MG-33). (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. (Refer to MECHANICAL ADJUSTMENT)

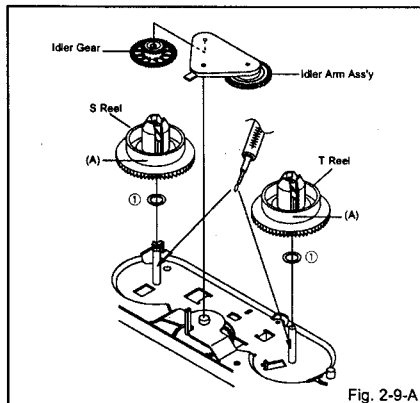


Fig. 2-9-A

NOTE

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. (Refer to Fig. 2-9-B)
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-9-C.

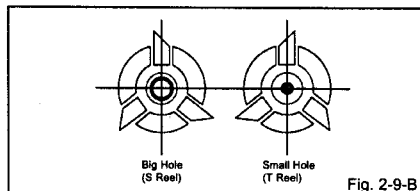


Fig. 2-9-B

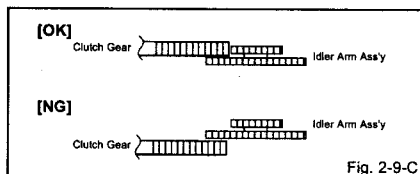


Fig. 2-9-C

DISASSEMBLY INSTRUCTIONS

2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/P5 ARM ASS'Y (Refer to Fig. 2-10-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Ass'y.

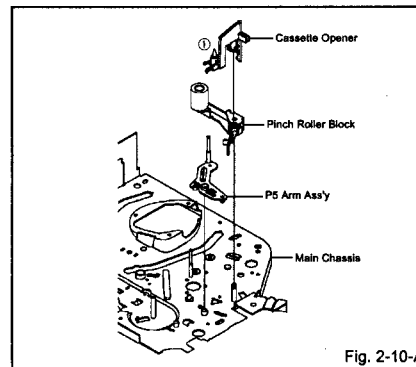


Fig. 2-10-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

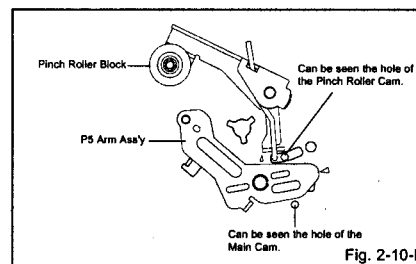


Fig. 2-10-B

2-11: A/C HEAD (Refer to Fig. 2-11-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).

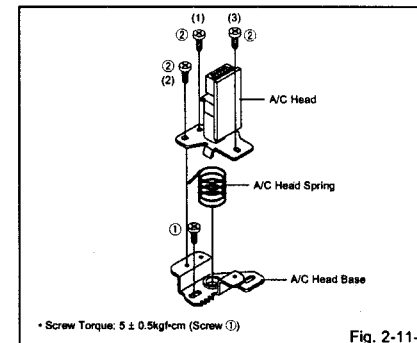


Fig. 2-11-A

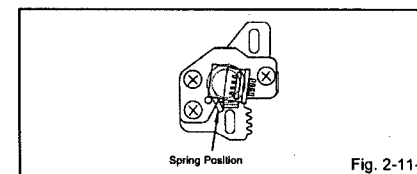


Fig. 2-11-B

2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw ①.
2. Remove the FE Head.

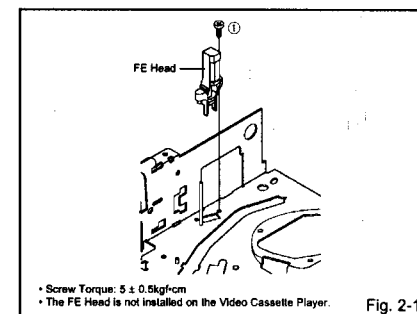


Fig. 2-12

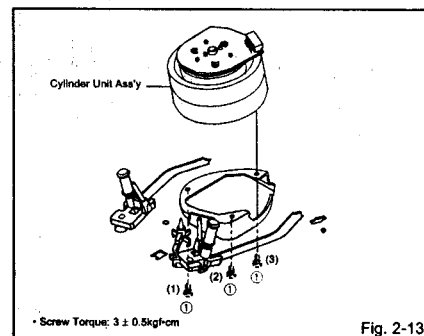
DISASSEMBLY INSTRUCTIONS

2-13: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-13)

1. Disconnect the following connector:
(CD2001)
2. Remove the 3 screws ①.
3. Remove the Cylinder Unit Ass'y.

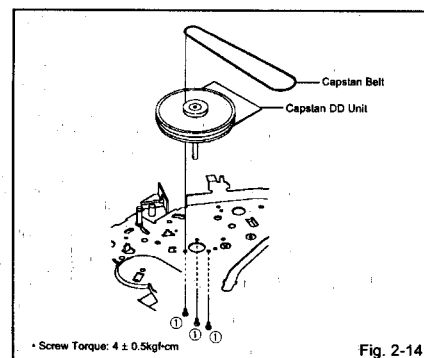
NOTE

1. When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.



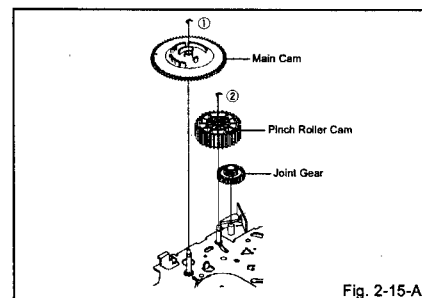
2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.



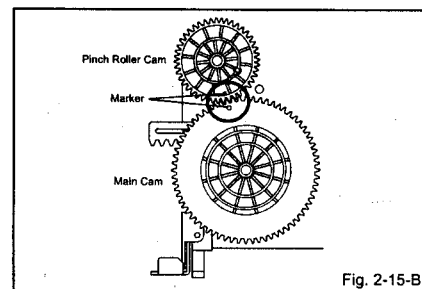
2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.



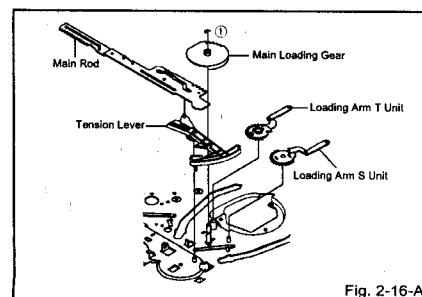
NOTE

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. (Refer to Fig. 2-15-B)



2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

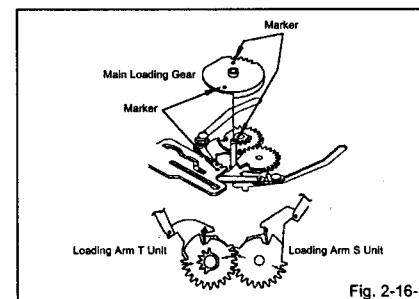
1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.



DISASSEMBLY INSTRUCTIONS

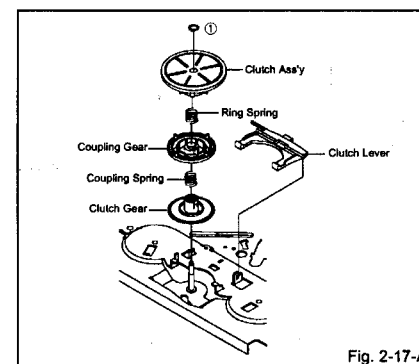
NOTE

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker.
(Refer to Fig. 2-16-B)



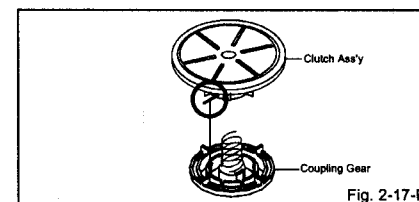
2-17: CLUTCH ASS'Y/RING SPRING/CLUTCH LEVER/ CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.



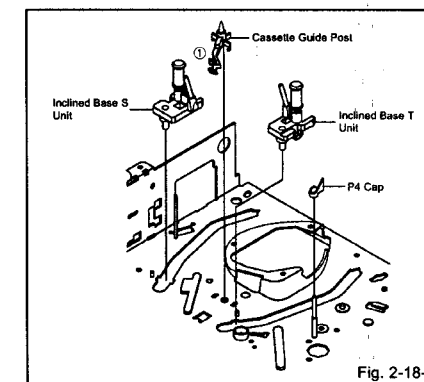
NOTE

1. In case of the Clutch Ass'y installation, install it with inserting the spring of the Clutch Ass'y into the dent of the Coupling Gear. (Refer to Fig. 2-17-B)



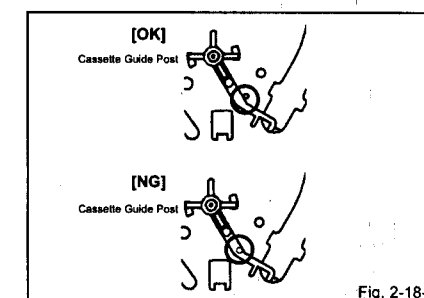
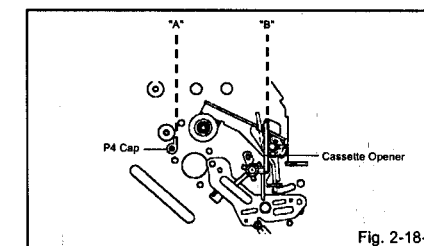
2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S Unit and Inclined Base T Unit.



NOTE

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.



DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

- After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

- Follow the steps as follows to discharge the Anode Cap. (Refer to Fig. 3-1.)
Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver. A cracking noise will be heard as the voltage is discharged.

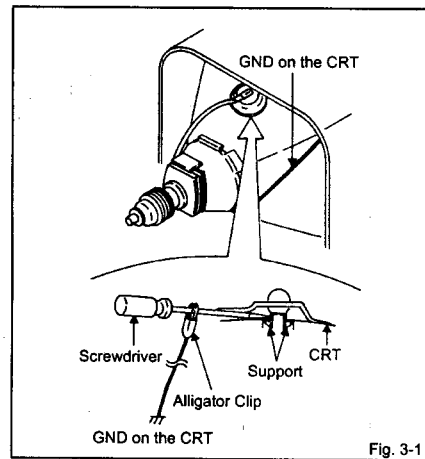


Fig. 3-1

- Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. (Refer to Fig. 3-2.)

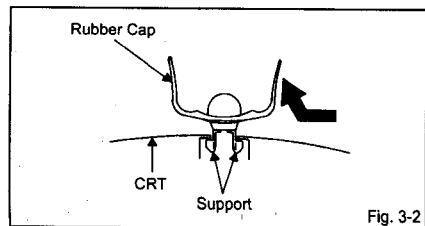


Fig. 3-2

- After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

- Clean the spot where the cap was located with a small amount of alcohol. (Refer to Fig. 3-3.)

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

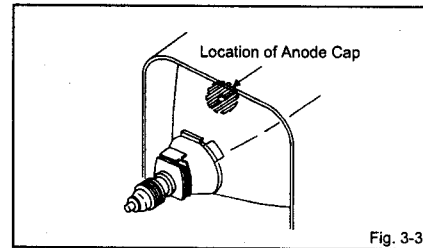


Fig. 3-3

- Arrange the wire of the Anode Cap and make sure the wire is not twisted.
- Turn over the Rubber Cap. (Refer to Fig. 3-4.)

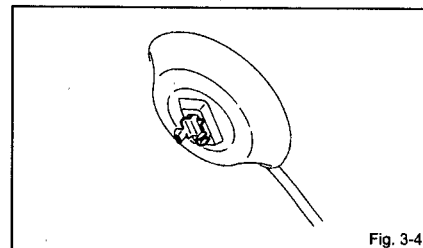


Fig. 3-4

- Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 3-5.

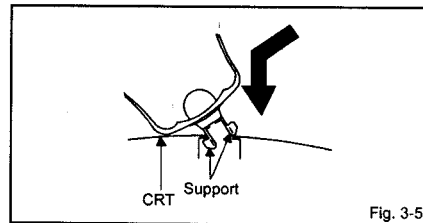


Fig. 3-5

- Confirm that the Support is securely connected.
- Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

4. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

- Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. (Refer to Fig. 4-1.)

NOTE

Masking is carried out on all the parts located within 10 mm distance from IC leads.

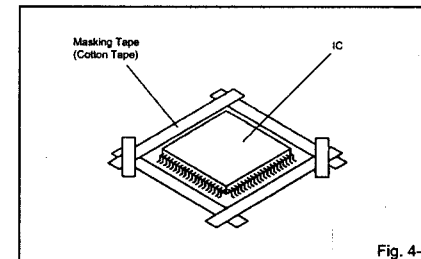


Fig. 4-1

- Heat the IC leads using a blower type IC desoldering machine. (Refer to Fig. 4-2.)

NOTE

Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

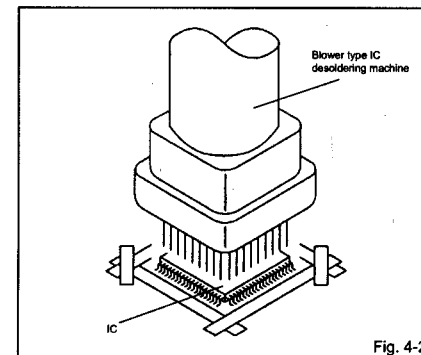


Fig. 4-2

- When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. (Refer to Fig. 4-3.)

NOTE

Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

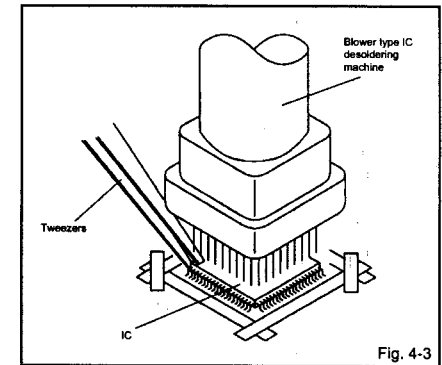


Fig. 4-3

- Peel off the Masking Tape.

- Absorb the solder left on the pattern using the Braided Shield Wire. (Refer to Fig. 4-4.)

NOTE

Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

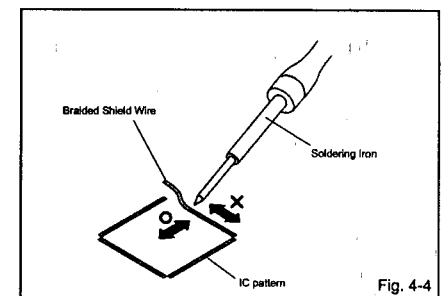


Fig. 4-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. (Refer to Fig. 4-5.)

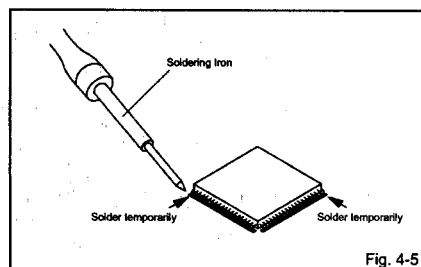


Fig. 4-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. (Refer to Fig. 4-6.)

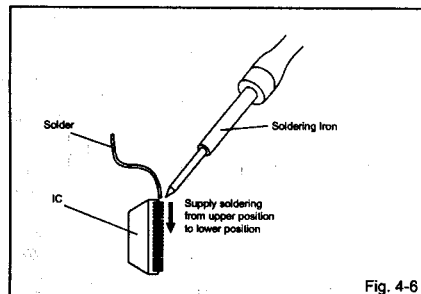


Fig. 4-6

3. Absorb the solder left on the lead using the Braided Shield Wire. (Refer to Fig. 4-7.)

NOTE

Do not absorb the solder to excess.

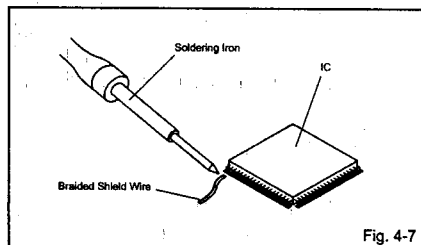


Fig. 4-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. (Refer to Fig. 4-8.)

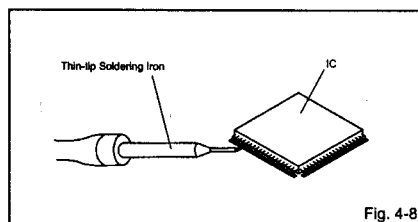


Fig. 4-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass. Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

KEY TO ABBREVIATIONS

A	A/C	: Audio/Control	H	SW	: Head Switch
	ACC	: Automatic Color Control		Hz	: Hertz
	AE	: Audio Erase	I	IC	: Integrated Circuit
	AFC	: Automatic Frequency Control		IF	: Intermediate Frequency
	AFT	: Automatic Fine Tuning		IND	: Indicator
	AFT DET	: Automatic Fine Tuning Detect		INV	: Inverter
	AGC	: Automatic Gain Control	K	KIL	: Killer
	AMP	: Amplifier	L	L	: Left
	ANT	: Antenna		LED	: Light Emitting Diode
	A.PB	: Audio Playback		LIMIT AMP	: Limiter Amplifier
	APC	: Automatic Phase Control		LM, LDM	: Loading Motor
	ASS'Y	: Assembly		LP	: Long Play
	AT	: All Time		L.P.F	: Low Pass Filter
	AUTO	: Automatic		LUMI.	: Luminance
	A/V	: Audio/Video	M	M	: Motor
B	BGP	: Burst Gate Pulse		MAX	: Maximum
	BOT	: Beginning of Tape		MINI	: Minimum
	BPF	: Bandpass Filter		MIX	: Mixer, mixing
	BRAKE SOL	: Brake Solenoid		MM	: Monostable Multivibrator
	BUFF	: Buffer		MOD	: Modulator, Modulation
	B/W	: Black and White		MPX	: Multiplexer, Multiplex
C	C	: Capacitance, Collector		MS SW	: Mecha State Switch
	CASE	: Cassette	N	NC	: Non Connection
	CAP	: Capstan		NR	: Noise Reduction
	CARR	: Carrier	O	OSC	: Oscillator
	CH	: Channel		OPE	: Operation
	CLK	: Clock	P	PB	: Playback
	CLOCK (SY-SE)	: Clock (Syscon to Servo)		PB CTL	: Playback Control
	COMB	: Combination, Comb Filter		PB-C	: Playback-Chrominance
	CONV	: Converter		PB-Y	: Playback-Luminance
	CPM	: Capstan Motor		PCB	: Printed Circuit Board
	CTL	: Control		P. CON	: Power Control
	CYL	: Cylinder		PD	: Phase Detector
	CYL-M	: Cylinder-Motor		PG	: Pulse Generator
	CYL SENS	: Cylinder-Sensor		P-P	: Peak-to Peak
D	DATA (SY-CE)	: Data (Syscon to Servo)	R	R	: Right
	dB	: Decibel		REC	: Recording
	DC	: Direct Current		REC-C	: Recording-Chrominance
	DD Unit	: Direct Drive Motor Unit		REC-Y	: Recording-Luminance
	DEM0D	: Demodulator		REEL BRK	: Reel Brake
	DET	: Detector		REEL S	: Reel Sensor
	DEV	: Deviation		REF	: Reference
E	E	: Emitter		REG	: Regulated, Regulator
	EF	: Emitter Follower		REW	: Rewind
	EMPH	: Emphasis		REV, RVS	: Reverse
	ENC	: Encoder		RF	: Radio Frequency
	ENV	: Envelope		RMC	: Remote Control
	EOT	: End of Tape		RY	: Relay
	EQ	: Equalizer	S	S. CLK	: Serial Clock
	EXT	: External		S. COM	: Sensor Common
F	F	: Fuse		S. DATA	: Serial Data
	FBC	: Feed Back Clamp		SEG	: Segment
	FE	: Full Erase		SEL	: Select, Selector
	FF	: Fast Forward, Flipflop		SENS	: Sensor
	FG	: Frequency Generator		SER	: Search Mode
	FL SW	: Front Loading Switch		SI	: Serial Input
	FM	: Frequency Modulation		SIF	: Sound Intermediate Frequency
	FSC	: Frequency Sub Carrier		SO	: Serial Output
	FWD	: Forward		SOL	: Solenoid
G	GEN	: Generator		SP	: Standard Play
	GND	: Ground		STB	: Serial Strobe
H	H.P.F	: High Pass Filter		SW	: Switch

KEY TO ABBREVIATIONS

S	SYNC	: Synchronization
	SYNC SEP	: Sync Separator, Separation
T	TR	: Transistor
	TRAC	: Tracking
	TRICK PB	: Trick Playback
	TP	: Test Point
U	UNREG	: Unregulated
V	V	: Volt
	VCO	: Voltage Controlled Oscillator
	VIF	: Video Intermediate Frequency
	VP	: Vertical Pulse, Voltage Display
	V.PB	: Video Playback
	VR	: Variable Resistor
	V.REC	: Video Recording
	VSF	: Visual Search Fast Forward
	VSR	: Visual Search Rewind
	VSS	: Voltage Super Source
	V-SYNC	: Vertical-Synchronization
	VT	: Voltage Tuning
X	X'TAL	: Crystal
Y	Y/C	: Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter SERVICE MODE, Unplug AC cord till lost actual clock time. Then press and hold Vol (-) button of main unit and remocon key for more than 2 seconds.

The both pressing of set key and remote control key will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.

Set Key	Remocon Key	Operations
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	2	Horizontal position adjustment of OSD. NOTE: Also can be adjusted by using the Adjustment MENU. Refer to the "ELECTRICAL ADJUSTMENT" (OSD HORIZONTAL).
VOL. (-) MIN	3	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	4	Adjust the PG SHIFTER manually. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	5	Adjusting of the Tracking to the center position. NOTE: Also can be adjusted by pressing the ATR button for more than 2 seconds during PLAY.
VOL. (-) MIN	6	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF HOURS USED). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	7	Releasing of PROTECTION PASSWORD.
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the "MECHANICAL ADJUSTMENT" (GUIDE ROLLER) and "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The EOT/BOT/Reel sensor do not work at this moment. Refer to the "PREPARATION FOR SERVICING"

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	■	■	
Capstan Belt			■	■	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■	■	■	●	Clean the Head

■ : Clean
● : Replace

CONFIRMATION OF HOURS USED

POWER ON total hours and PLAY/REC total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

NOTE: The confirmation of using hours will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and the Channel button (6) on the remote control for more than 2 seconds.
3. After the confirmation of using hours, turn off the power.

INIT 0B4 00	Initial setting content of MEMORY IC.
POWER ON 0000	POWER ON total hours.
PLAY/REC 0000	PLAY/REC total hours.

(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

PREVENTIVE CHECKS AND SERVICE INTERVALS

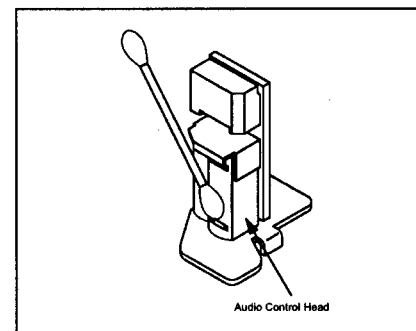
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. (Refer to the figure below.)



2. TAPE RUNNING SYSTEM

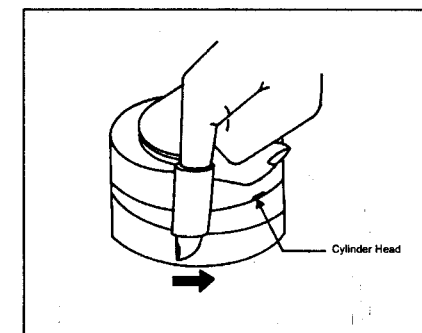
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). (Refer to the figure below.)

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head. Use the chamois one by one.



WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: Initial Data setting will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
0B0	--	--	--	--	00	05	30	00	C0	8C	00	ED	C0	E1	81	02
0C0	00	27	98	A3	00	05	63	65	66	47	1B	3B	32	17	19	1B
0D0	3A	0F	4B	20	44	63	6B	65	64	EA	00	F5	77	50	68	5F
0E0	0F	00	11	F3	5F	0F	30	05	F3	60	99	B2	9A	97	8C	B2
0F0	A0	C4	20	08	BF	10	00	00	00	00	00	00	00	00	00	00
100	27	03	07	15	F3	00	23	42	20	11	F0	02	09	00	82	10
110	00	07	04	00	40	20	20	00	00	40	00	00	00	00	00	00
120	25	27	29	2B	2D	2F	31	33	35	37	3A	3D	40	43	46	49
130	4C	4F	52	55	57	59	5B	5D	5F	61	63	65	67	69	6B	6D
140	6F	71	73	76	79	7C	7F	82	85	88	8B	8E	91	94	97	9A
150	9D	A0	A5	AA	AF	B4	B9	BE	C3	C8	CD	D2	D9	E1	F0	FF

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.

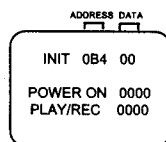



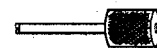
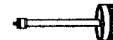

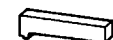


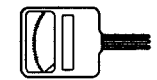


Fig. 1

3. ADDRESS is now selected and should "blink". Using the PLAY or STOP button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using PLAY or STOP button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input. The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

(For 2 head 1 speed model, 4 head model) VHS Alignment Tape JG001E (VP: S-LI6 ³) JG001F (VP: S-CO1 ³) JG001R (VP: S-LI6 ³ H) JG001U (VP: S-X6 ³) 	(For 2 head 2 speed model) VHS Alignment Tape JG001C (VP: S-LI6 ³) JG001D (VP: S-CO1 ³) JG001V (VP: S-X6 ³) 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf·cm) JG002F (60~600gf·cm) 	JG005 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small) 
JG153 X Value Adjustment Screwdriver 	JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG100A Torque Tape (VHT-063) 
JG154 Cable 	Tentelometer 		

Ref. No.	Part No.	Parts Name	Remarks
JG001E	APJG001E00	VHS Alignment Tape	Monoscope, 6KHz (For 2 head 1 speed model, 4 head model)
JG001F	APJG001F00	VHS Alignment Tape	Color Bar, 1KHz (For 2 head 1 speed model, 4 head model)
JG001R	APJG001R00	VHS Alignment Tape	Hi-Fi Audio (For Hi-Fi model)
JG001U	APJG001U00	VHS Alignment Tape	X Value Adjustment (For 2 head 1 speed model, 4 head model)
JG001C	APJG001C00	VHS Alignment Tape	Monoscope, 6KHz (For 2 head 2 speed model)
JG001D	APJG001D00	VHS Alignment Tape	Color Bar, 1KHz (For 2 head 2 speed model)
JG001V	APJG001V00	VHS Alignment Tape	X Value Adjustment (For 2 head 2 speed model)
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf·cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf·cm)	VSR Torque, Brake Torque (S Reel)
JG005	APJG005000	Post Adjustment Screwdriver	Guide Roller Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG100A	APJG100A00	Torque Tape (VHT-063)	Playback Torque, Back Tension Torque During Playback
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Unplug the connector CP351 and CP757 then remove the TV/VCR Block from the set.
2. Remove the Operation PCB from the set, then connect it with the Syscon PCB.
If necessary, connect CD351.
3. Short circuit between TP1001 and Ground with the cable JG154.
(Refer to MAJOR COMPONENTS LOCATION GUIDE)
4. The EOT, BOT and Reel Sensor do not work at this moment.
At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)
- When you activate the deck without the Cassette Holder, short circuit between TP1001 and GND. (Refer to ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE) In this condition the BOT/EOT/Reel Sensor will not function.

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

- Turn on the power and set to the STOP mode.
- Set the master plane (JG022) and reel disk height adjustment jig (JG024A) on the mechanism framework, taking care not to scratch the drum, as shown in Fig. 1-1-A.
- While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig (JG024A) and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to $10(+2, -0)$ mm.
- Adjust the other reel in the same way.

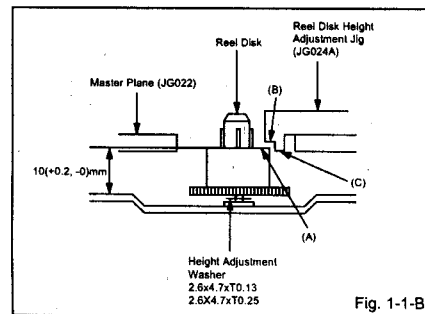
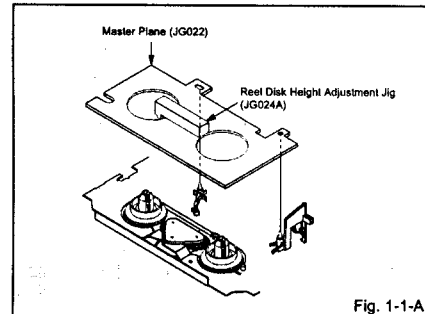


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

- Set to the PLAY mode.
- Adjust the adjusting parts for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
- While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

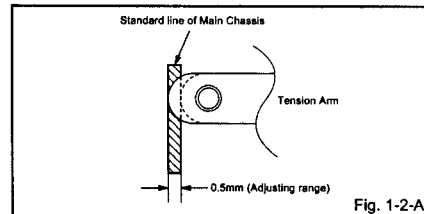


Fig. 1-2-A

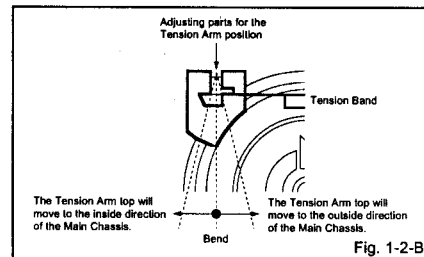


Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

- Load a video tape (E-180) recorded in standard speed mode. Set the unit to the PLAY mode.
- Install the tentelometer as shown in Fig. 1-3. Confirm that the meter indicates 20 ± 2 gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE (JG100A)

- After confirmation and adjustment of Tension Post position (Refer to Item 1-2), load the cassette type torque tape (JG100A) and set to the PLAY mode.
- Confirm that the right meter of the torque tape indicates 50~90gf·cm during playback in SP mode.
- Confirm that the left meter of the torque tape indicates 25~40gf·cm during playback in SP mode.

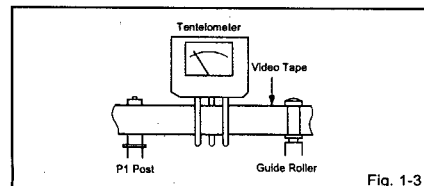


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

- Install the Torque Gauge (JG002F) and Adapter (JG002B) on the S Reel. Set to the Picture Search (Rewind) mode. (Refer to Fig. 1-4-B)
- Then, confirm that it indicates 120~180gf·cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) (Refer to Fig. 1-4-B)

- Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of Fig. 1-4-A.
- Move the Idler Ass'y from the S Reel.
- Install the Torque Gauge (JG002F) and Adapter (JG002B) on the S Reel. Turn the Torque Gauge (JG002F) clockwise.
- Then, confirm that it indicates 60~100gf·cm.

(T Reel Brake) (Refer to Fig. 1-4-B)

- Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of Fig. 1-4-A.
- Move the Idler Ass'y from the T Reel.
- Install the Torque Gauge (JG002F) and Adapter (JG002B) on the T Reel. Turn the Torque Gauge (JG002F) counterclockwise.
- Then, confirm that it indicates 30~50gf·cm.

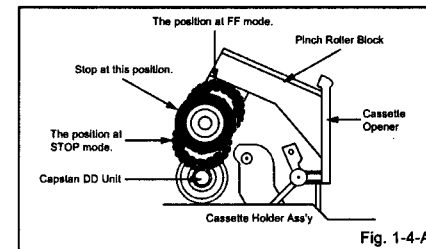


Fig. 1-4-A

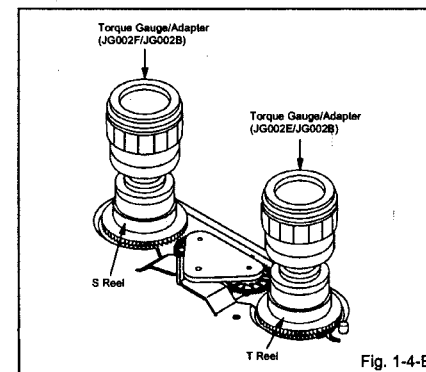


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check Item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band/Tension Connect/Tension Arm Ass'y T Reel side: T Reel/T Brake Band/T Brake Spring/T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

- Playback the VHS Alignment Tape (JG001C or JG001E). (Refer to SERVICING FIXTURE AND TOOLS)
- Connect CH-1 of the oscilloscope to TP4002 (Envelope) and CH-2 to TP4001 (SW Pulse).
- Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
- Trigger with SW Pulse and observe the envelope. (Refer to Fig. 2-1-A)
- When observing the envelope, adjust the Adjusting Driver (JG005) slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
- Adjust so that the A : B ratio is better than 3 : 2 as shown in Fig. 2-1-B, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
- Adjust the PG shifter during playback. (Refer to the ELECTRICAL ADJUSTMENTS)

NOTE

After adjustment, confirm and adjust A/C head. (Refer to Item 2-2)

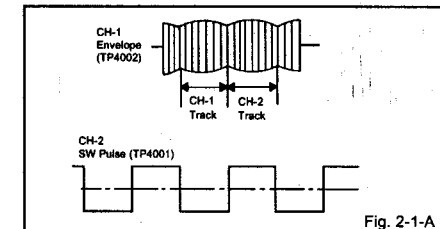


Fig. 2-1-A

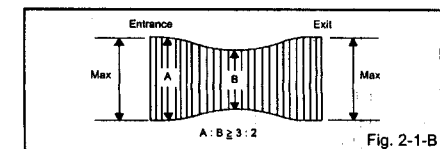


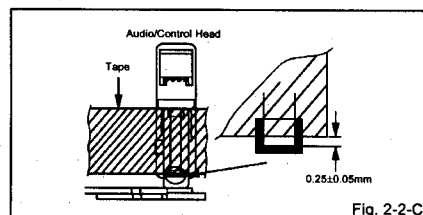
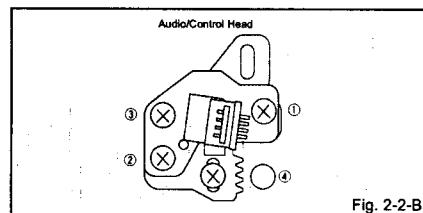
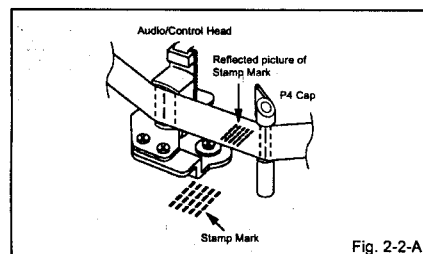
Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/CONTROL HEAD

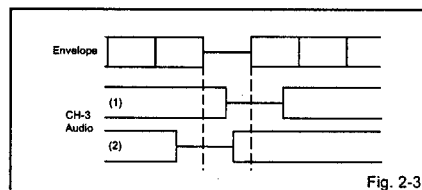
When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape (JG001C or JG001E). (Refer to **SERVICING FIXTURE AND TOOLS**)
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in Fig. 2-2-A.
 - a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
 - b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/Control Head and the bottom of the tape is shown in Fig. 2-2-C.
 - c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.



2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. (Refer to item 1-1)
2. Confirm and adjust the position of the Tension Post. (Refer to item 1-2)
3. Adjust the Guide Roller. (Refer to item 2-1)
4. Confirm and adjust the Audio/Control Head. (Refer to item 2-2)
5. Connect CH-1 of the oscilloscope to TP4001, CH-2 to TP4002 and CH-3 to HOT side of Audio Out Jack.
6. Playback the VHS Alignment Tape (JG001U or JG001V). (Refer to **SERVICING FIXTURE AND TOOLS**)
7. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver (JG153) to the ④ of Fig. 2-2-B. Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of Fig. 2-3.

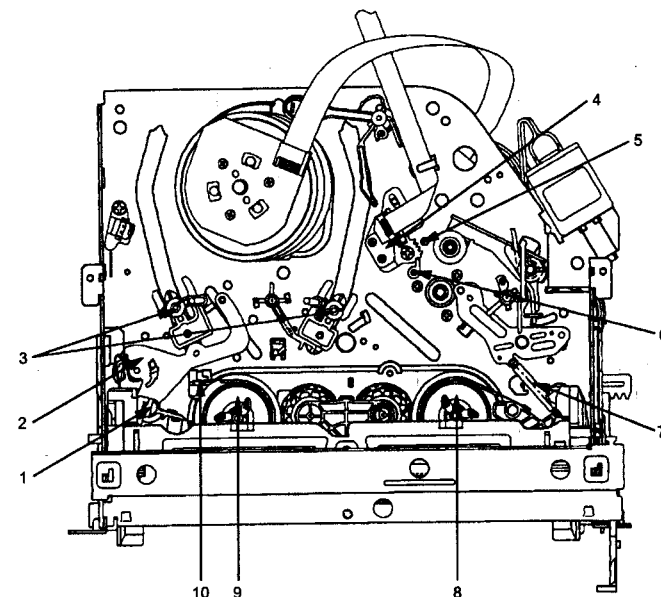


2-4: CONFIRM HI-FI AUDIO (Hi-Fi model only)

1. Connect CH-1 of the oscilloscope to TP4002 and CH-2 to the Hi-Fi Audio Out Jack.
2. Playback the VHS Alignment Tape (JG001R). (Refer to **SERVICING FIXTURE AND TOOLS**)
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the Tracking Up button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
5. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
6. Press the Tracking Down button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
7. If the difference are more than 3 steps, set the X Value adjustment driver (JG153) to ④ of Fig. 2-2-B. Change the X Value and adjust it so that the value becomes within 2 steps.

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



- | | |
|-----------------------------------|--|
| 1. Tension Connect | 6. P4 Post |
| 2. Tension Arm | 7. T Brake Spring |
| 3. Guide Roller | 8. T Reel |
| 4. Audio/Control Head | 9. S Reel |
| 5. X value adjustment driver hole | 10. Adjusting parts for the Tension Arm position |

ELECTRICAL ADJUSTMENTS

1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

When replacing IC's or transistors, use only specified silicon grease (YG6260M).
(To prevent the damage to IC's and transistors.)

On-Screen Display Adjustment

1. Unplug the AC plug for more than 30 minutes to set the clock to the non-setting state. (To release the Back-Up immediately, take the short circuit between C1003 and GND at the Power Off.) Then, set the volume level to minimum.
2. Press the VOL. DOWN button on the set and the channel button (9) on the remote control for more than 2 seconds to display adjustment mode on the screen as shown in Fig. 1-1.

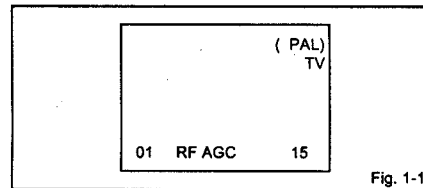


Fig. 1-1

3. Use the Channel UP/DOWN button or Channel button (0-9) on the remote control to select the options shown in Fig. 1-2.
4. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	CUT OFF	20	CONTRAST CENT
01	RF AGC	21	CONTRAST MAX
02	AGC GAIN	22	CONTRAST MIN
03	R DRIVE	23	COLOR CENT
04	R CUTOFF	24	COLOR MAX
05	G DRIVE	25	COLOR MIN
06	G CUTOFF	26	TINT
07	B DRIVE	27	SHARP
08	H POSI	28	M R CUT OFF
09	V POSI	29	M G CUT OFF
10	---	30	M B CUT OFF
11	V SIZE	31	H POS OSD
12	---	32	---
13	VCO COARSE	33	---
14	VCO FINE	34	---
15	VCO COARSE L1	35	CVBS OUT
16	VCO FINE L1	36	APR THRESHOLD
17	BRIGHT CENT	37	BELL FILTER
18	BRIGHT MAX	38	BANDPASS
19	BRIGHT MIN		

Fig. 1-2

2. BASIC ADJUSTMENTS

(VCR SECTION)

2-1: PG SHIFTER

1. Connect CH-1 on the oscilloscope to TP4001 and CH-2 to TP4201.
2. Playback the alignment tape. (JG001F)
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the VOL. DOWN button on the set and the channel button (3) on the remote control simultaneously until the indicator REC disappears. If the indicator REC disappears, adjustment is completed.

(If the above adjustments doesn't work well:)

5. Press the VOL. DOWN button on the set and the channel button (3) on the remote control simultaneously until the indicator REC disappears.
6. When the REC indicator is blinking, press both VOL. DOWN button on the set and the channel button (4) on the remote control simultaneously and adjust the Tracking +/- button until the arising to the down of Head Switching Pulse becomes $6.5 \pm 0.5H$. (Refer to Fig. 2-1-A, B)
7. Stop the alignment tape.

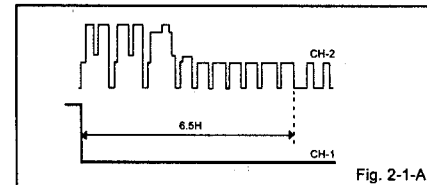


Fig. 2-1-A

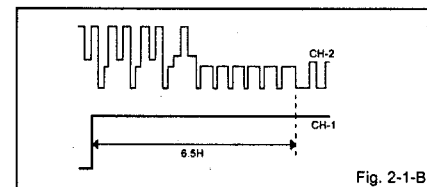


Fig. 2-1-B

2-2: VCO

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the oscillator (38.9MHz) to TP601.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (13) on the remote control to select "VCO COARSE".
4. Press the VOL. UP/DOWN button on the remote control until the "OK" appear on the screen. If the "OK" is not displayed, select the "-" side on the changed from "+" to "-".
5. Press the CH UP button once to set to "VCO FINE" mode.
6. Press the VOL. UP/DOWN button on the remote control to select the 5 step down point from the upper limit on the "OK".
(Example: In case of the "OK" point 30-41, select 36.)

ELECTRICAL ADJUSTMENTS

2-3: RF AGC

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the UHF (63dB).
3. Connect the digital voltmeter between the pin 5 of CP603 and the pin 1 (GND) of CP603.
4. Activate the adjustment mode display of Fig. 1-1 and press the channel button (01) on the remote control to select "RF AGC".
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is $2.4 \pm 0.1V$.

(TV SECTION)

2-4: CONSTANT VOLTAGE

1. Connect the digital voltmeter to TP501.
2. Set condition is AV MODE without signal.
3. Using the remote control, set the brightness and contrast to normal position.
4. Adjust the VR502 until the digital voltmeter is $135 \pm 0.5V$.

2-5: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the Focus Volume until picture is distinct.

2-6: HORIZONTAL POSITION

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (08) on the remote control to select "H POSI (50)".
4. Press the VOL. UP/DOWN button on the remote control until the right and left screen size of the vertical line becomes the same.
5. Receive the cross hatch signal of NTSC. (Audio Video Input)
6. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2-4.

2-7: VERTICAL POSITION

NOTE: Adjust after performing adjustments in section 2-6.

1. Receive the cross hatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (09) on the remote control to select "V POSI (50)".
4. Check if the step No. V.POSI (50) is "5".
5. Adjust the VR402 until the horizontal line becomes fit to notch of the shadow mask.
6. Receive the cross hatch signal of NTSC. (Audio Video Input)
7. Using the remote control, set the brightness and contrast to normal position.
8. Activate the adjustment mode display of Fig. 1-1 and press the channel button (09) on the remote control to select "V POSI (60)".
9. Check if the step No. V.POSI (60) is "15".

2-8: VERTICAL LINEARITY

NOTE: Adjust after performing adjustments in section 2-7.

1. Receive the cross hatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the VR401 until the SHIFT quantity of the OVER/SCAN on upside and downside becomes minimum.

2-9: VERTICAL SIZE

NOTE: Adjust after performing adjustments in section 2-8.

1. Receive the cross hatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (11) on the remote control to select "V SIZE (50)".
4. Press the VOL. UP/DOWN button on the remote control until the rectangle on the center of the screen becomes square.
5. Receive a broadcast and check if the picture is normal.
6. Receive the cross hatch signal of NTSC. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2-4.

2-10: OSD HORIZONTAL

1. Using the remote control, set the brightness and contrast to normal position.
2. Activate the adjustment mode display of Fig. 1-1 and press the channel button (31) on the remote control to select "H POS OSD".
3. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum.
(Refer to Fig. 2-2)

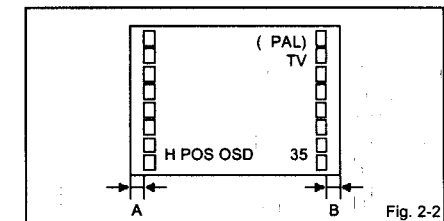


Fig. 2-2

2-11: CUT OFF

1. Set condition is AV MODE without signal.
2. Using the remote control, set the brightness and contrast to normal position.
3. Place the set with Aging Test for more than 15 minutes.
4. Activate the adjustment mode display of Fig. 1-1 and press the channel button (00) on the remote control to select "CUT OFF".
5. Adjust the Screen Volume until a dim raster is obtained.

ELECTRICAL ADJUSTMENTS

2-12: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of Fig. 1-1 and press the channel button (03) on the remote control to select "R DRIVE".
5. Using the VOL. UP/DOWN button on the remote control, adjust the R DRIVE.
6. Press the CH. UP/DOWN button on the remote control to select the "R DRIVE", "G DRIVE", "M R CUTOFF" or "M G CUTOFF".
7. Using the VOL. UP/DOWN button on the remote control, adjust the R DRIVE, G DRIVE, M R CUTOFF or M G CUTOFF.
8. Perform the above adjustments 6 and 7 until the white color is looked like a white.

2-13: BRIGHT CENT

1. Receive the PAL black pattern*. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of Fig. 1-1 and press the channel button (17) on the remote control to select "BRIGHT CENT".
4. Press the VOL. UP/DOWN button on the remote control until the screen begin to shine.
5. Receive the PAL black pattern*. (Audio Video Input)
6. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.

* The Black Pattern means the whole black raster signal. Select the "RASTER" of the pattern generator, set to the OFF position for each R, G and B.

2-14: CONTRAST CENT

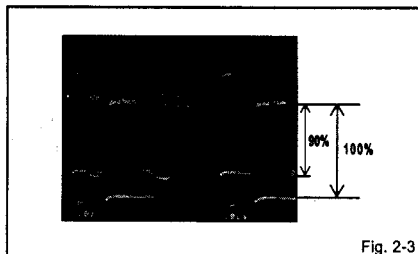
1. Activate the adjustment mode display of Fig. 1-1 and press the channel button (20) on the remote control to select "CONTRAST CENT".
2. Press the VOL. UP/DOWN button on on the remote control until the contrast step No. becomes "24".
3. Press the AV button on the remote control to set to the AV mode.
4. Activate the adjustment mode display of Fig. 1-1 and press the channel button (20) on the remote control to select "CONTRAST CENT".
5. Press the VOL. UP/DOWN button on on the remote control until the contrast step No. becomes "24".

2-15: SUB SHARPNESS

1. Activate the adjustment mode display of Fig. 1-1 and press the channel button (27) on the remote control to select "SHARPNESS".
2. Press the VOL. UP/DOWN button on on the remote control until the contrast step No. becomes "5".
3. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 1~3.

2-17: COLOR CENT

1. Receive the PAL color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast and color to normal position.
3. Connect the oscilloscope to TP803.
4. Activate the adjustment mode display of Fig. 1-1 and press the channel button (23) on the remote control to select "COLOR CENT".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to $90 \pm 5\%$ of the white level. (Refer to Fig. 2-3)
7. Receive the PAL color bar pattern. (Audio Video Input)
8. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~6.



2-18: Confirmation of Fixed Value (Step No.)

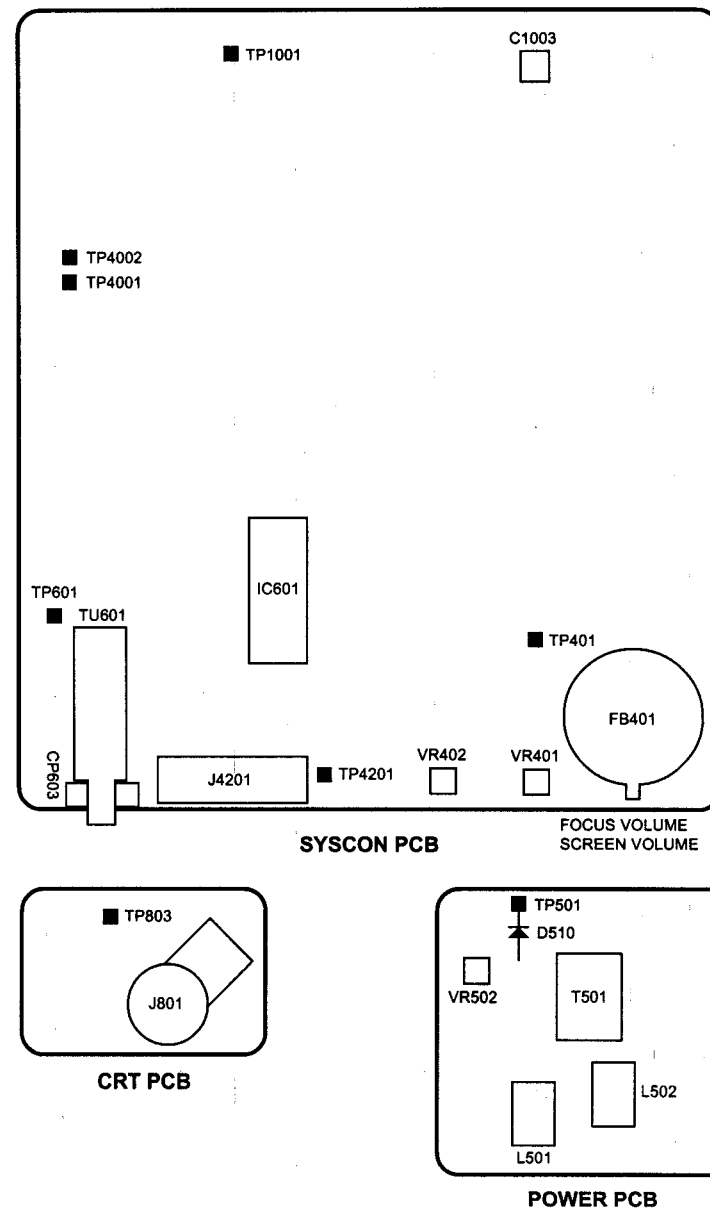
Please check if the fixed values of the each adjustment items are set correctly referring below.

NO.	FUNCTION	RF (50Hz)	RF (60Hz)	AV
02	AGC GAIN	00	---	---
04	R CUTOFF	31	---	---
06	G CUTOFF	31	---	---
07	B DRIVE	31	---	---
15	VCO COARSE L1	00	---	---
16	VCO FINE L1	00	---	---
18	BRIGHT MAX	55	---	---
19	BRIGHT MIN	20	---	---
21	CONTRAST MAX	40	---	---
22	CONTRAST MIN	10	---	---
24	COLOR MAX	60	---	---
25	COLOR MIN	10	---	---
27	SHARP	05	---	05
30	M B CUT OFF	50	---	---
35	CVBS OUT	10	---	---
36	APR THRESHOLD	15	---	---
37	BELL FILTER	00	---	---
38	BANDPASS	00	---	---

*To check for the fixed values of the RF (60Hz), indicate the adjustment mode screen while input the 60Hz video signal.

ELECTRICAL ADJUSTMENTS

3. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE



ELECTRICAL ADJUSTMENTS

4. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

4-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. (Refer to Fig. 4-1)
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

4-2: PURITY

NOTE

Adjust after performing adjustments in section 4-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue color.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

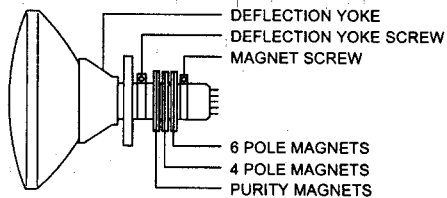


Fig. 4-1

4-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 4-2.

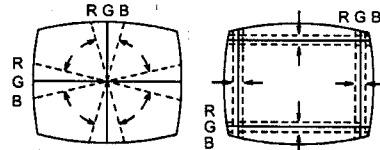
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

4-4: DYNAMIC CONVERGENCE

NOTE

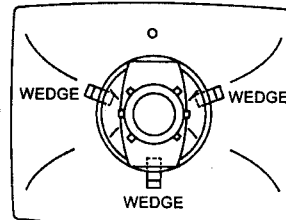
Adjust after performing adjustments in section 4-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. (Refer to Fig. 4-2-a)
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. (Refer to Fig. 4-2-b)



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

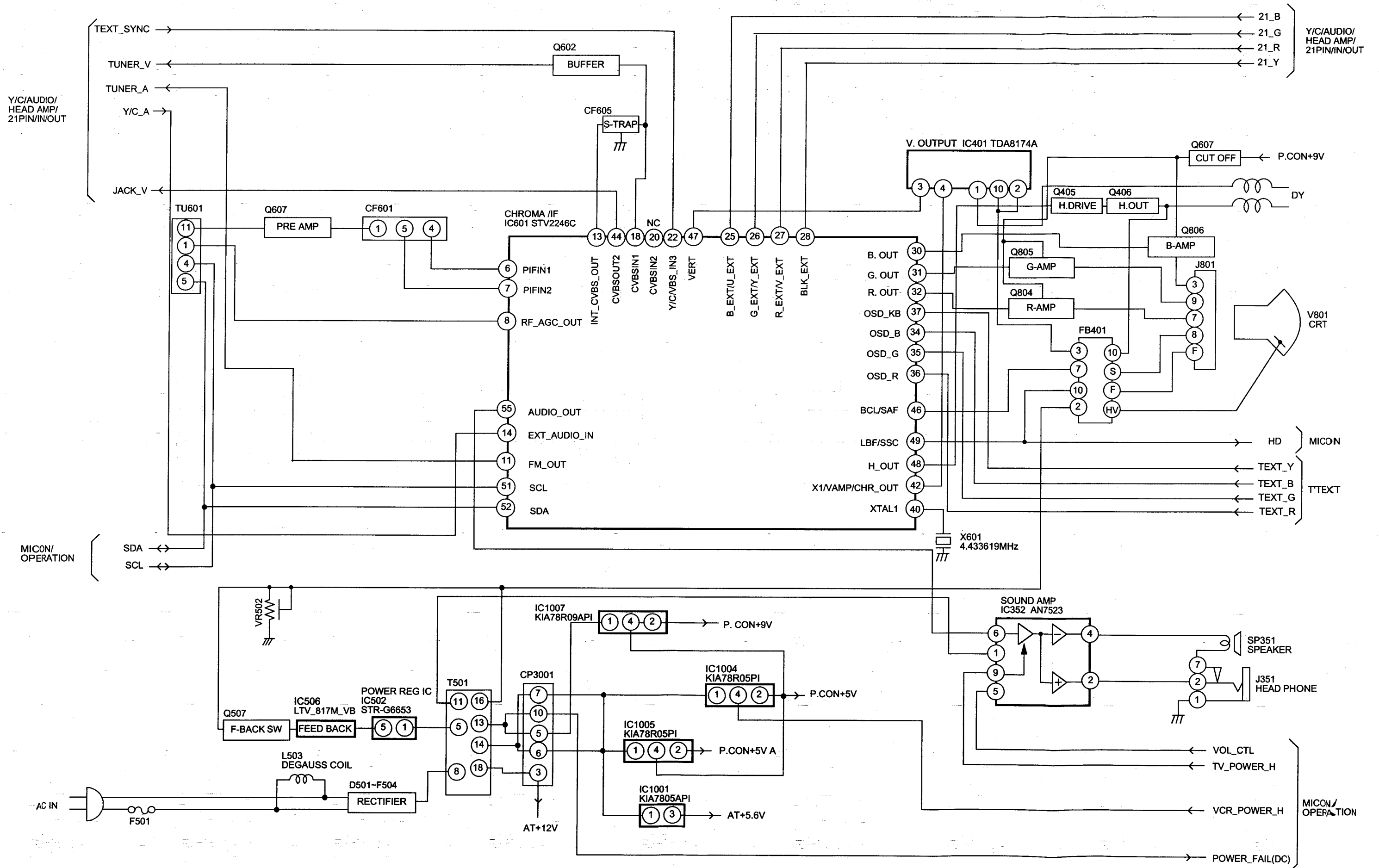
Fig. 4-2-a



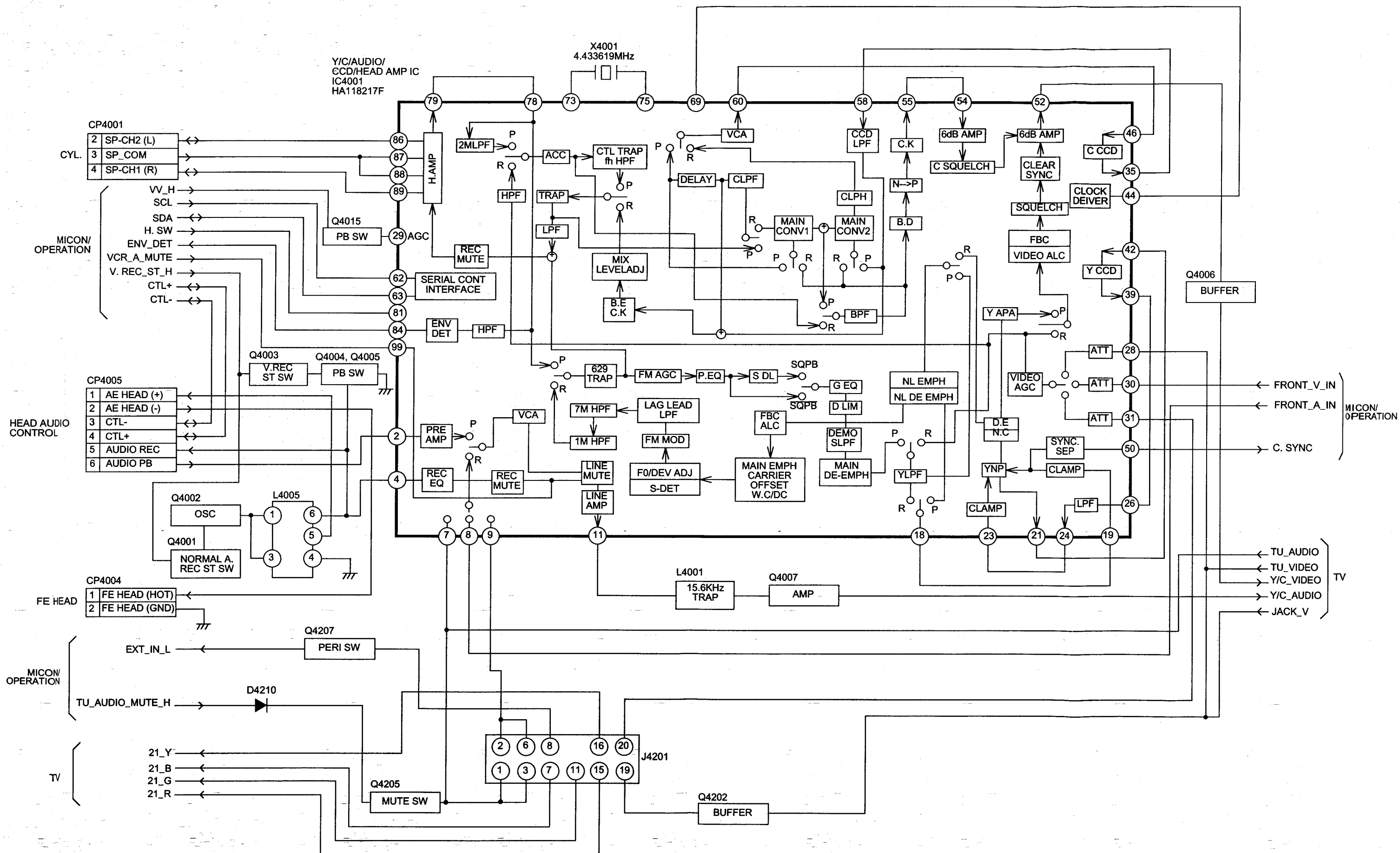
WEDGE POSITION

Fig. 4-2-b

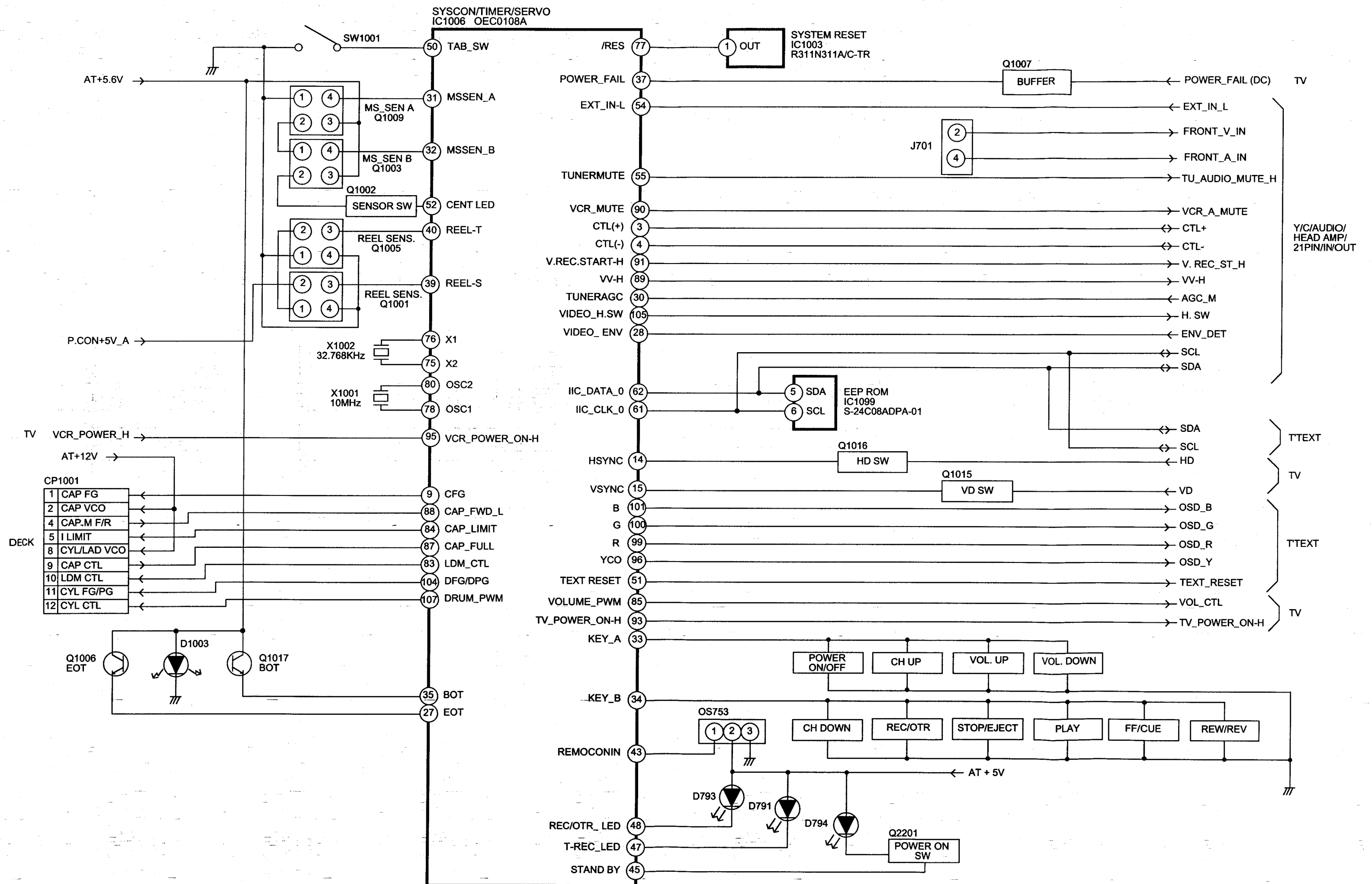
TV BLOCK DIAGRAM



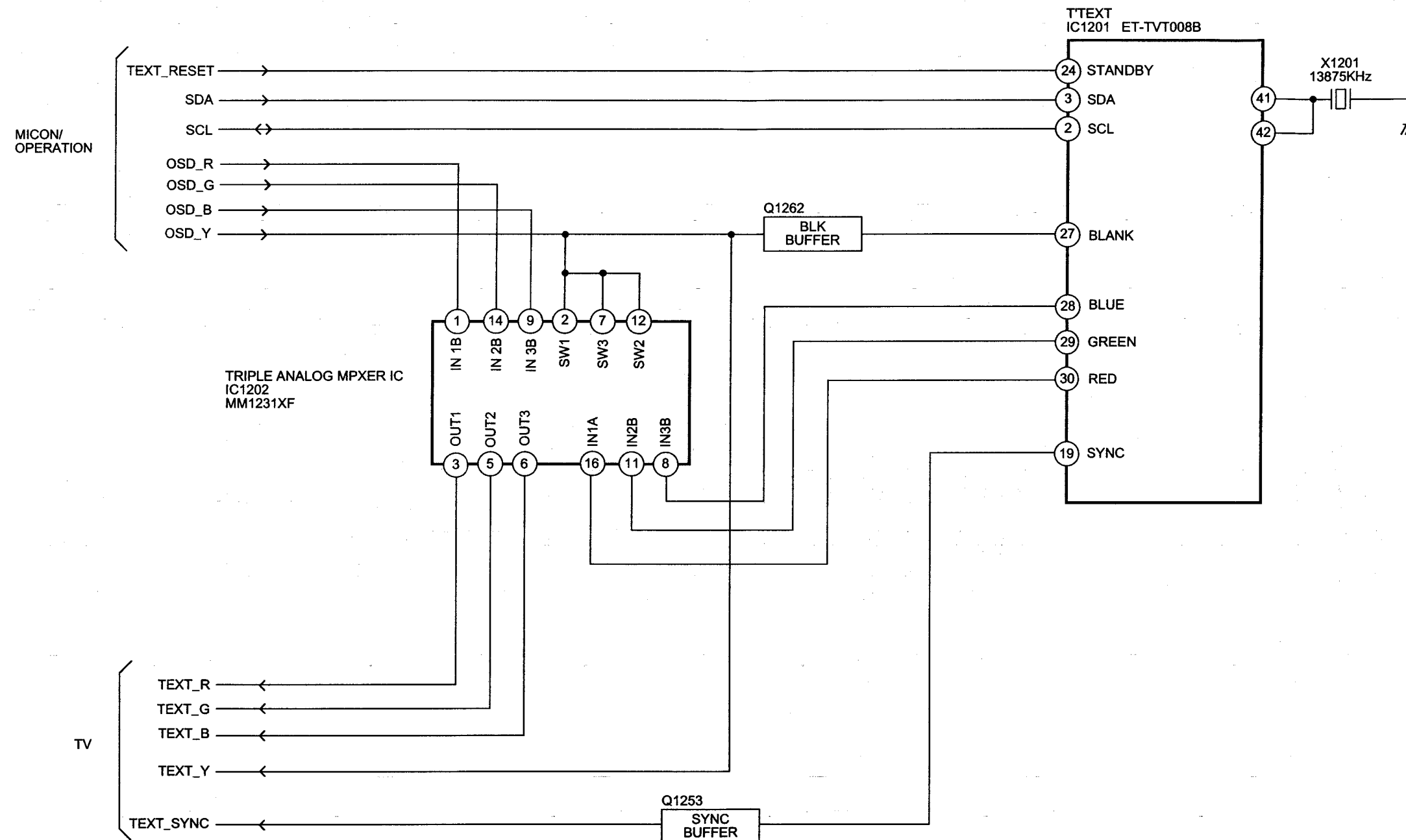
Y/C/AUDIO/HEAD AMP/21PIN/IN/OUT BLOCK DIAGRAM



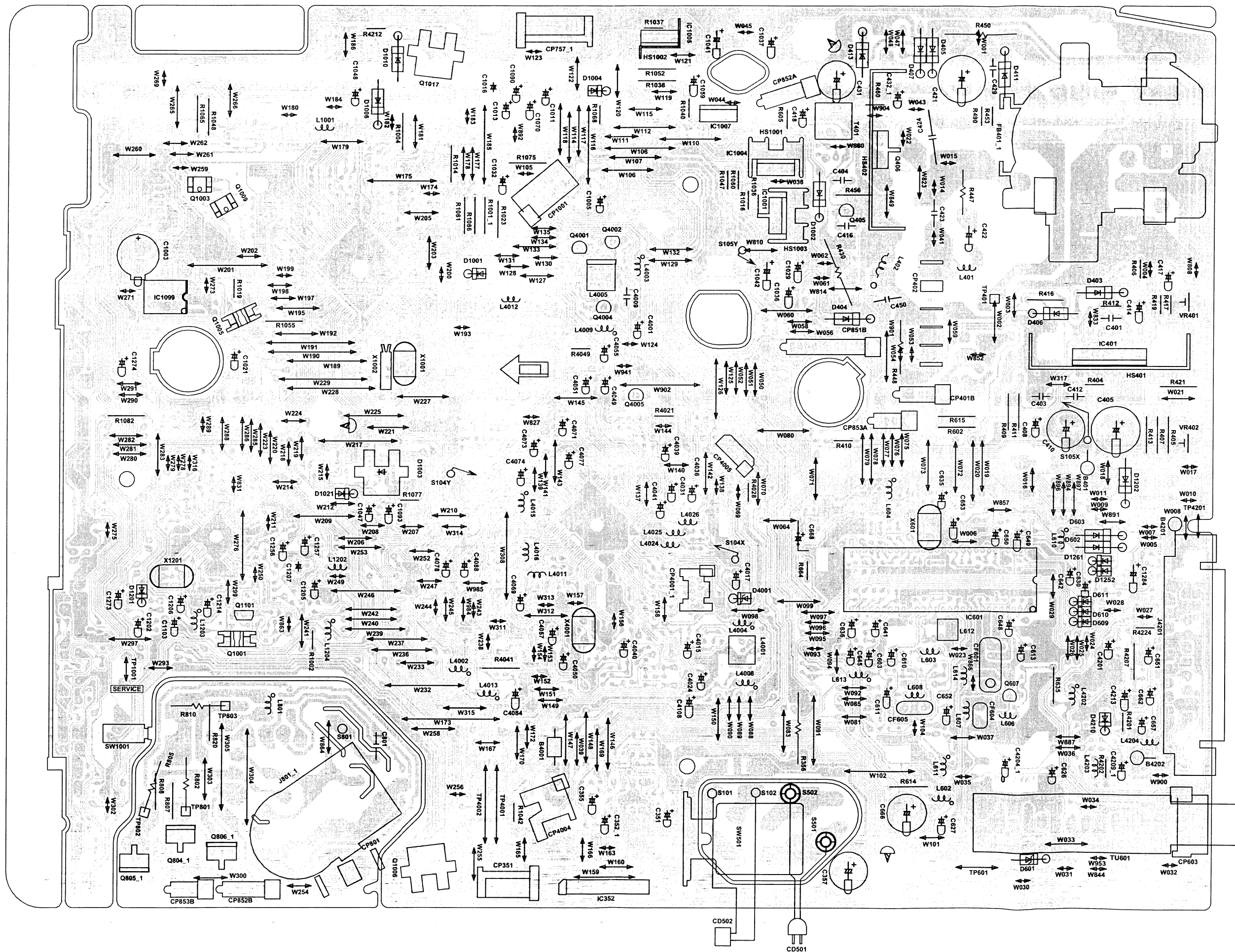
MICON/OPERATION BLOCK DIAGRAM



T' TEXT BLOCK DIAGRAM

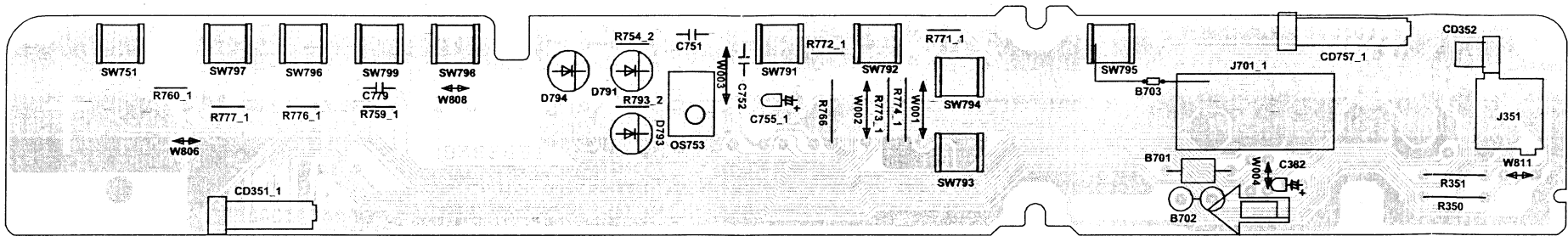


PRINTED CIRCUIT BOARDS
SYSCON/CRT/POWER SW (INSERTED PARTS)
SOLDER SIDE

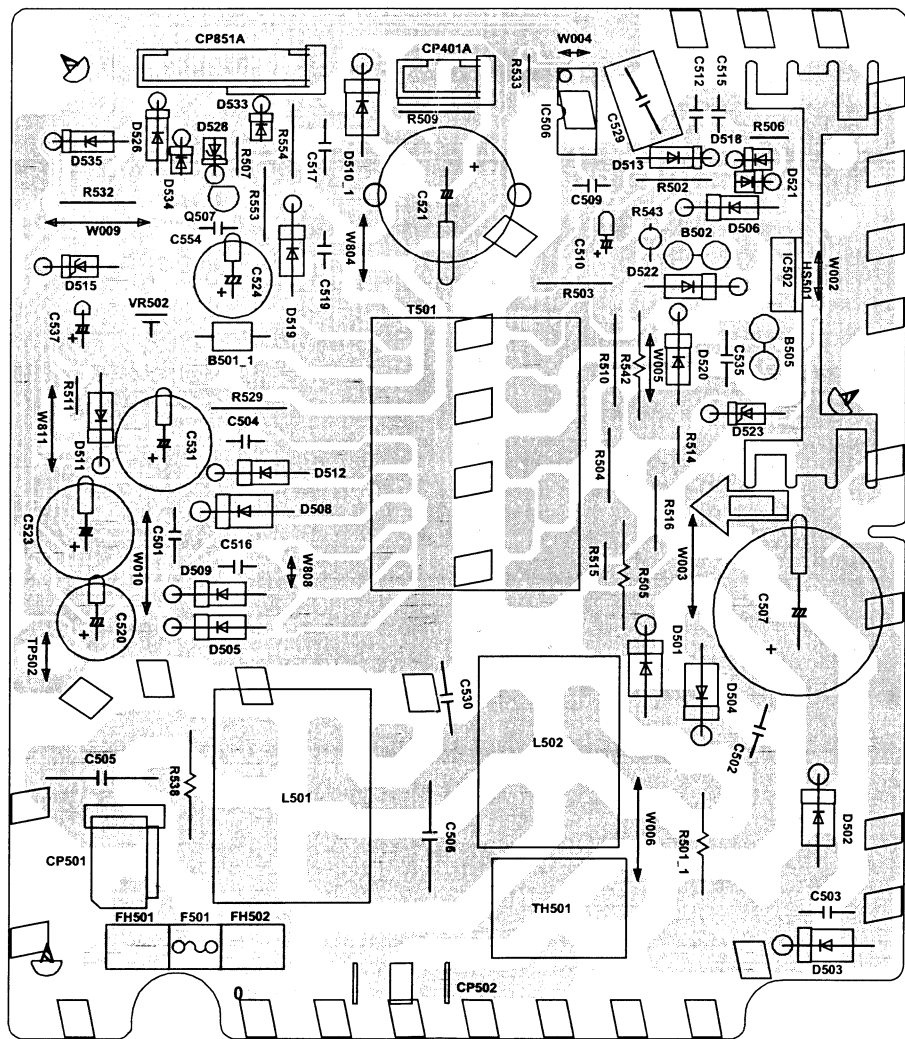


PRINTED CIRCUIT BOARDS

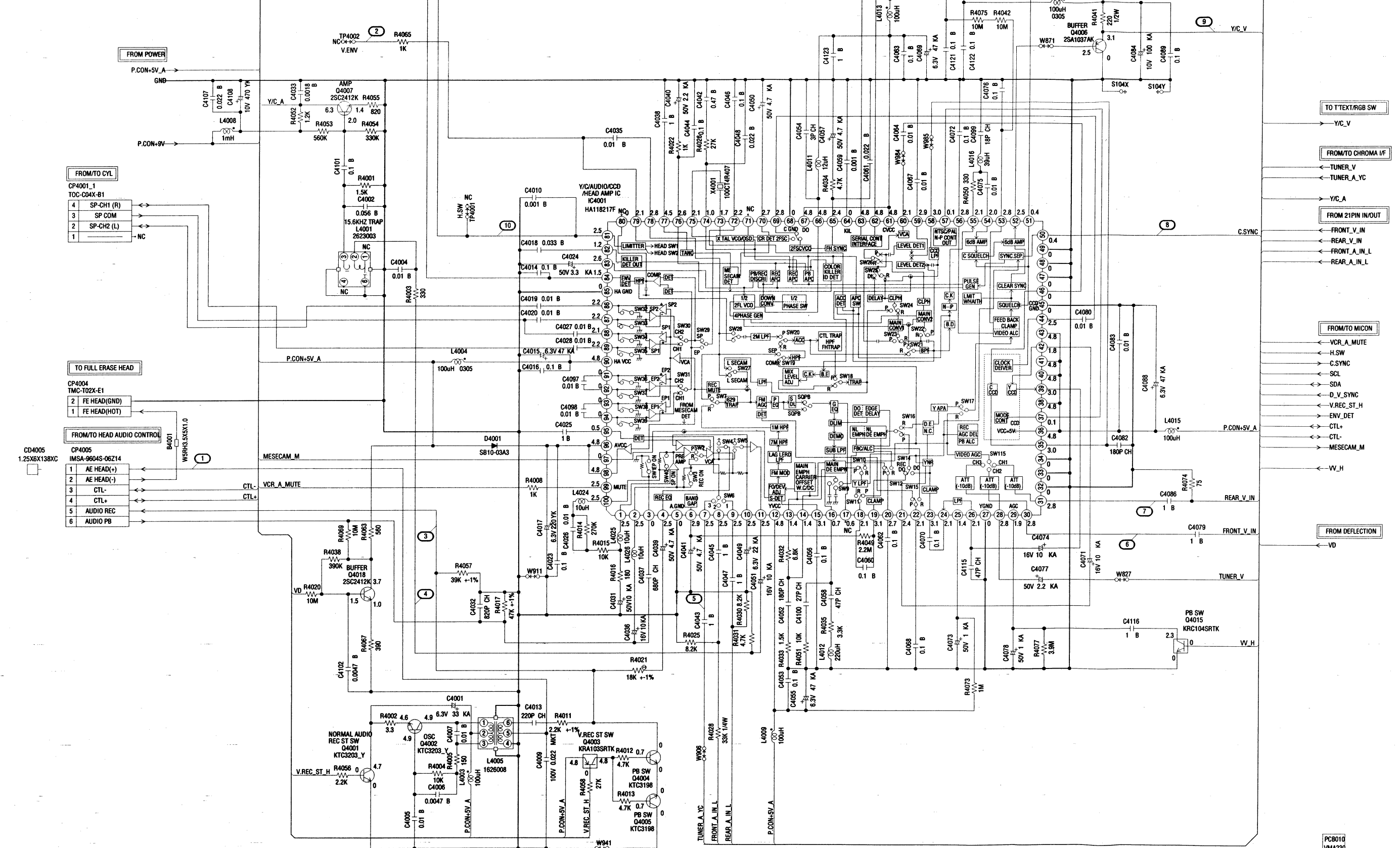
OPERATION
SOLDER SIDE



POWER
SOLDER SIDE



Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM (SYSCON PCB)

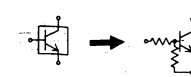


NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

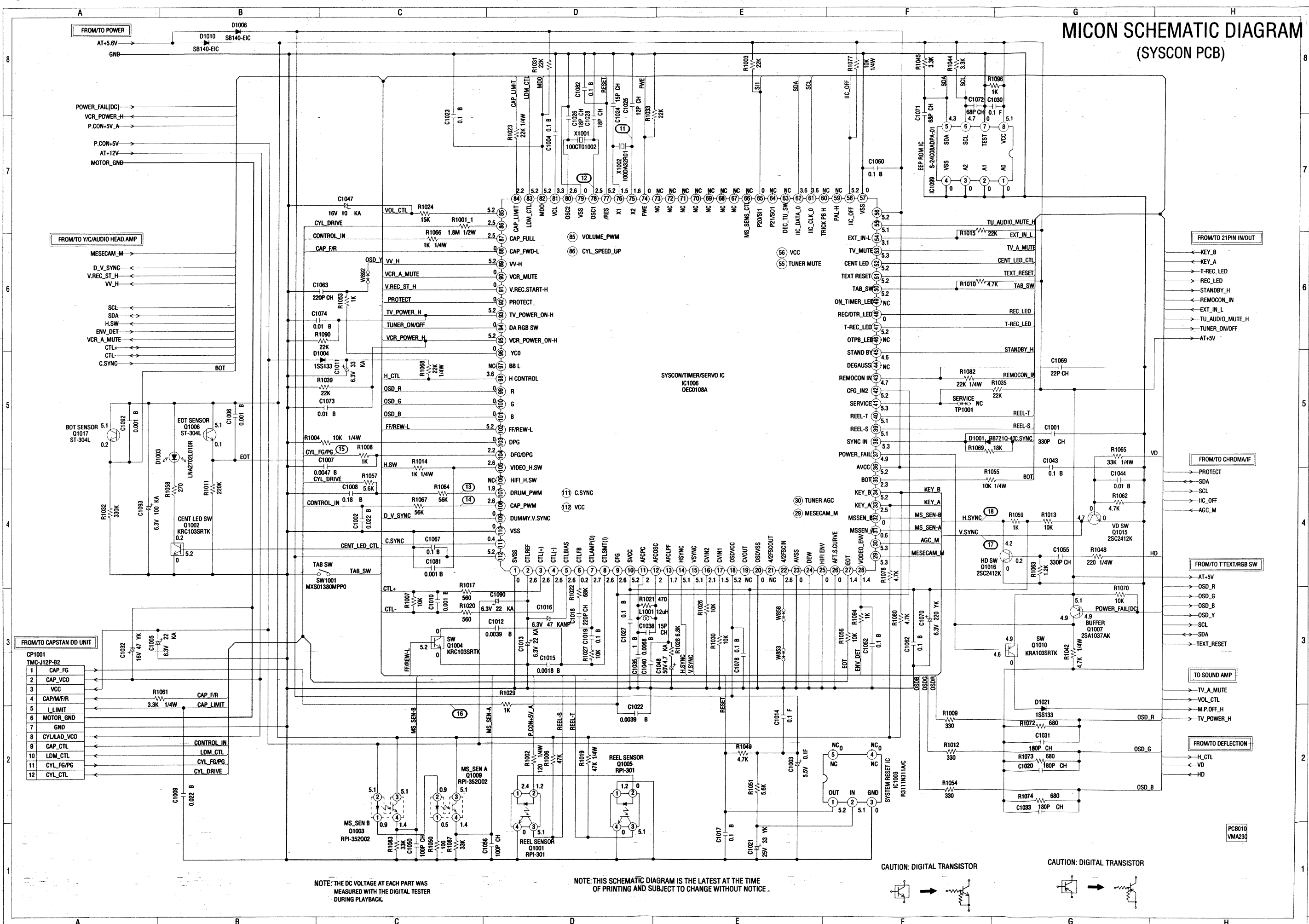
CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR



PCB010
VMA230

MICON SCHEMATIC DIAGRAM (SYSCON PCB)



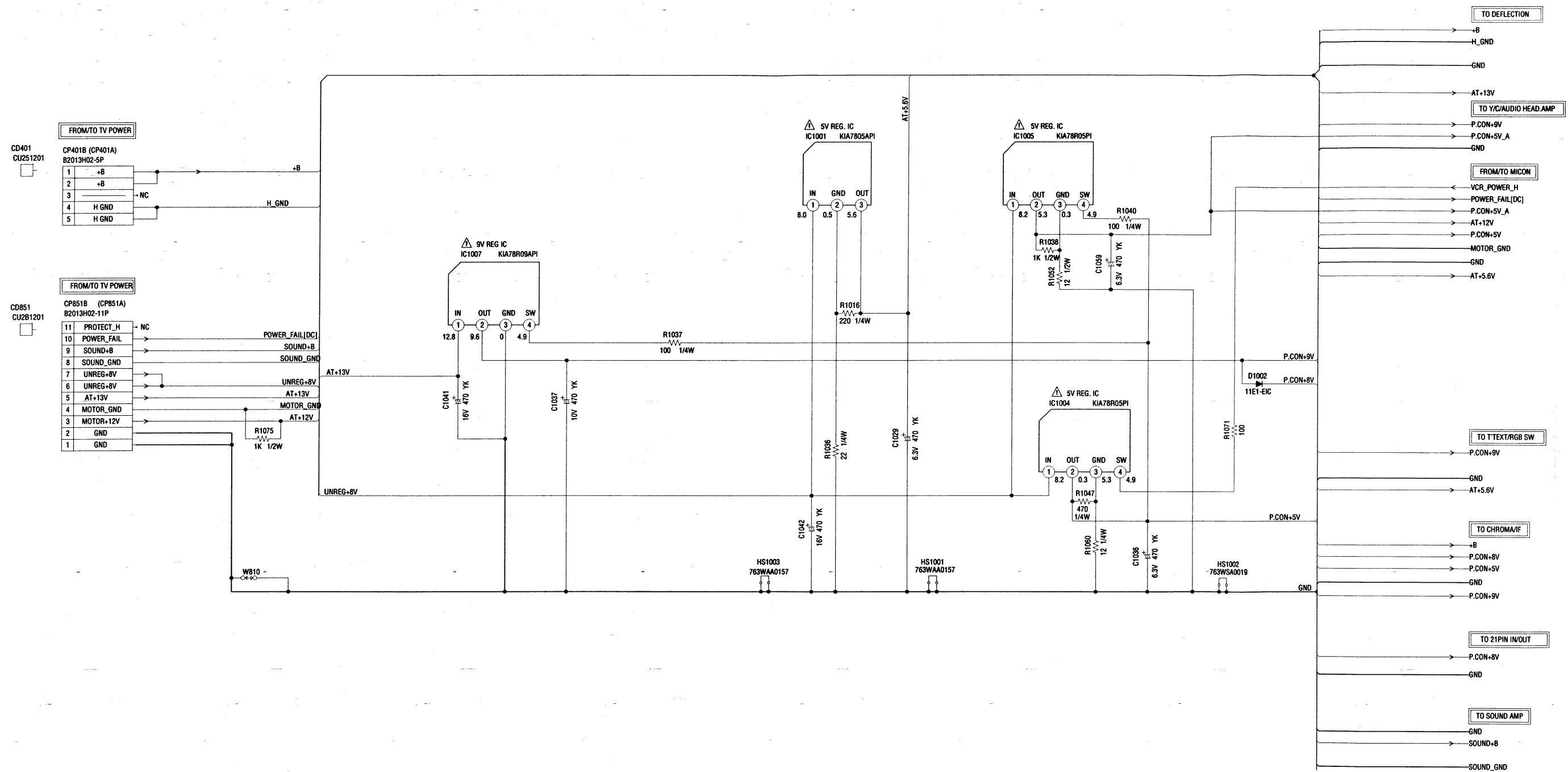
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: DIGITAL TRANSISTOR



POWER SCHEMATIC DIAGRAM (SYSCON PCB)



ATTENTION: LES PIÈCES REPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

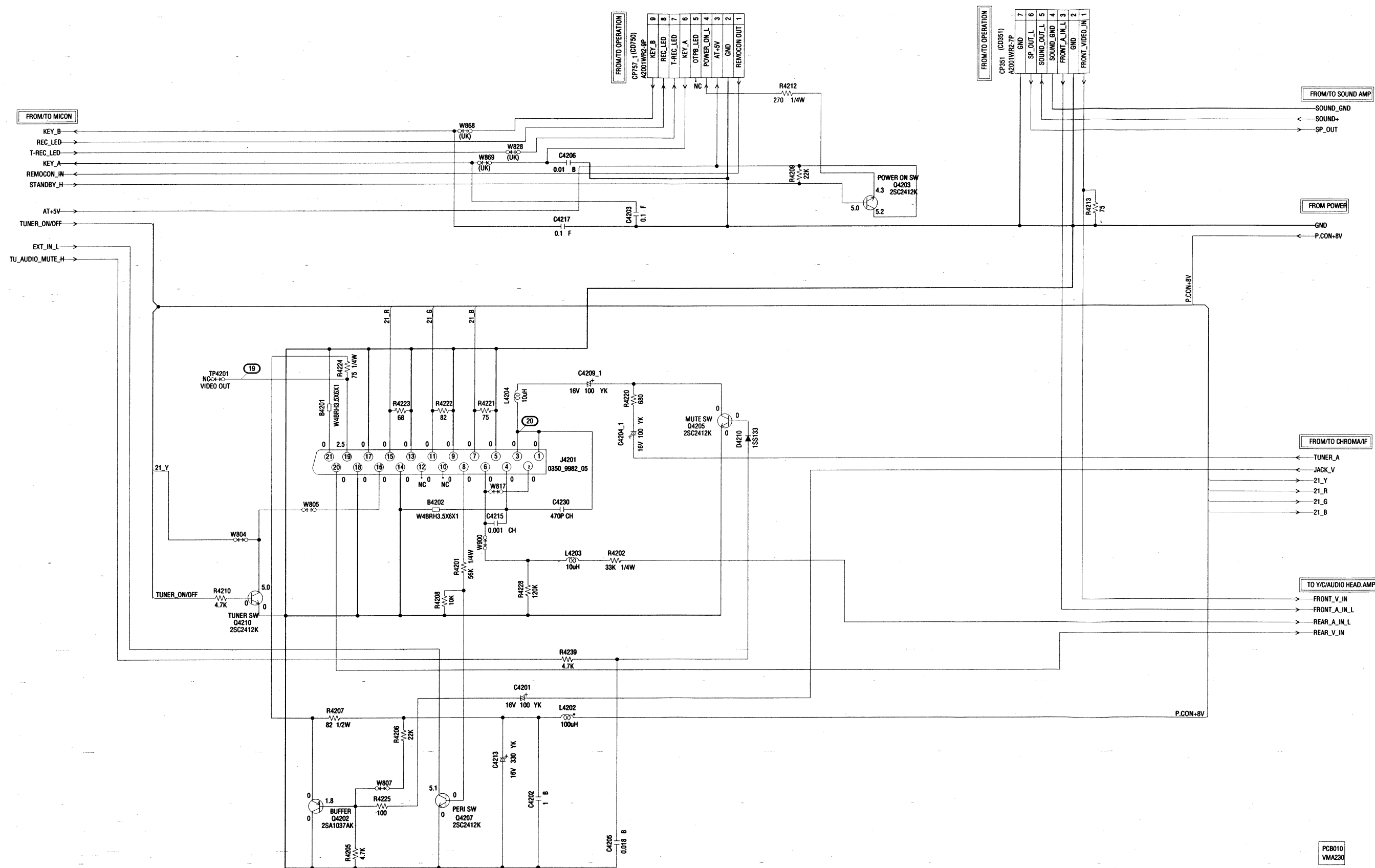
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

PC8010
VMA230

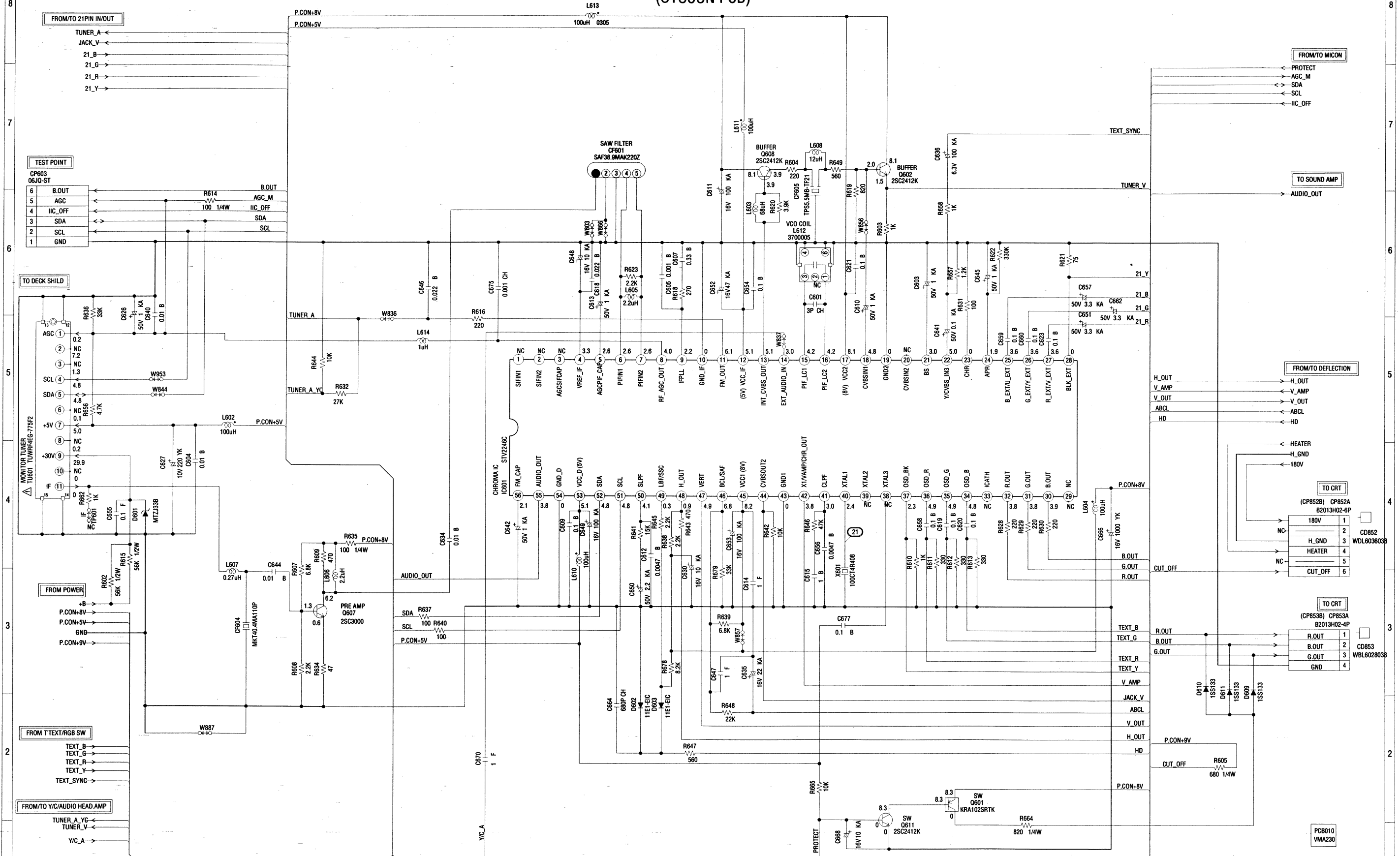
21PIN/IN/OUT SCHEMATIC DIAGRAM (SYSCON PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS
MEASURED WITH THE DIGITAL TESTER
DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CHROMA/IF SCHEMATIC DIAGRAM (SYSCON PCB)



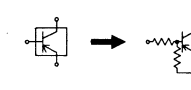
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

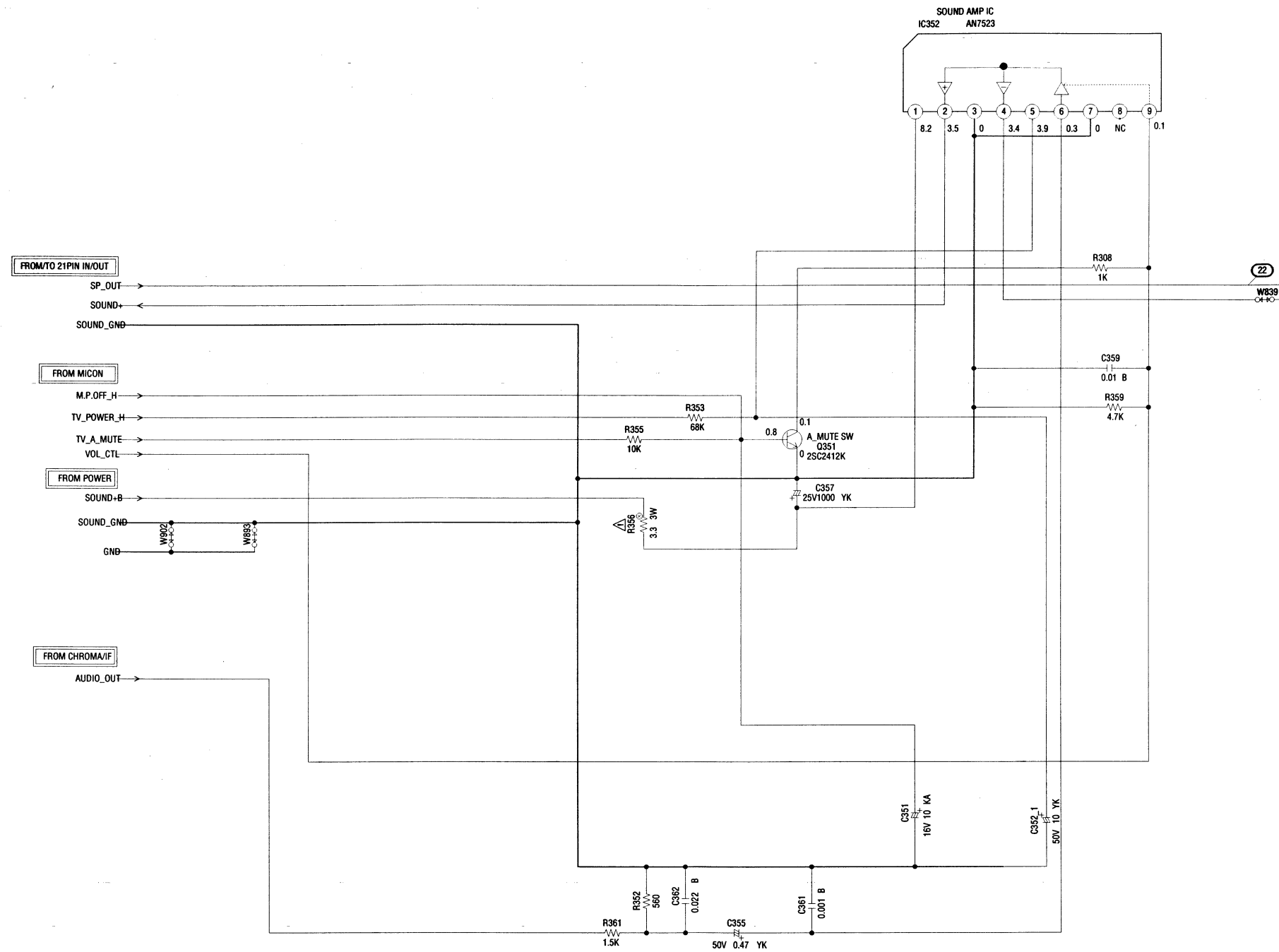
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION: DIGITAL TRANSISTOR



SOUND AMP SCHEMATIC DIAGRAM (SYSCON PCB)



ATTENTION: LES PIECES REPARÉES PAR UN ETANT DANGEREUSES AU POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIECES.

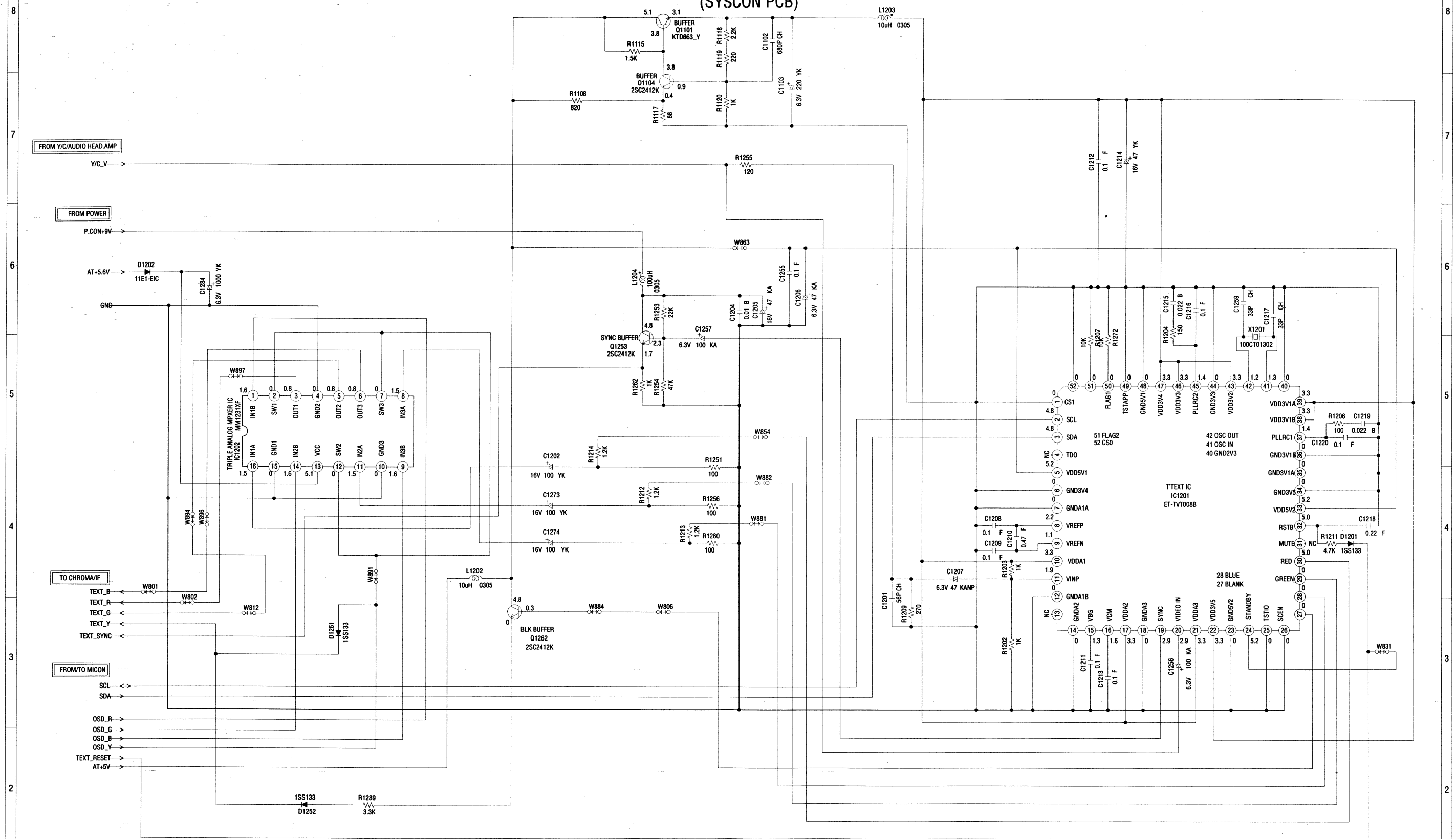
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY USE ONES DESCRIBED IN PARTS LIST ONLY.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

PCB010
VMA230

T'TEXT/RGB SW SCHEMATIC DIAGRAM (SYSCON PCB)

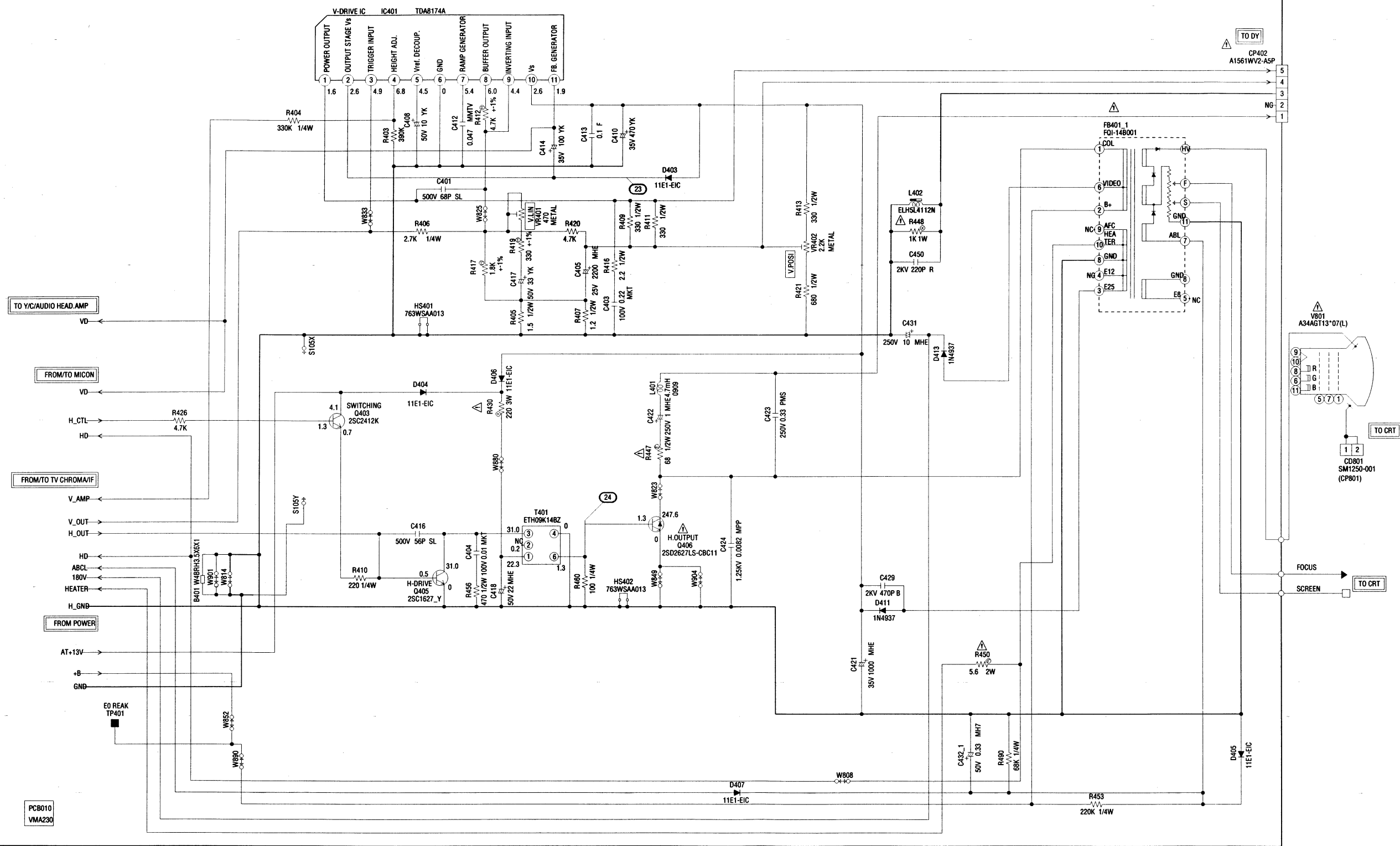


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

PC8010
VMA230

DEFLECTION SCHEMATIC DIAGRAM (SYSCON PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

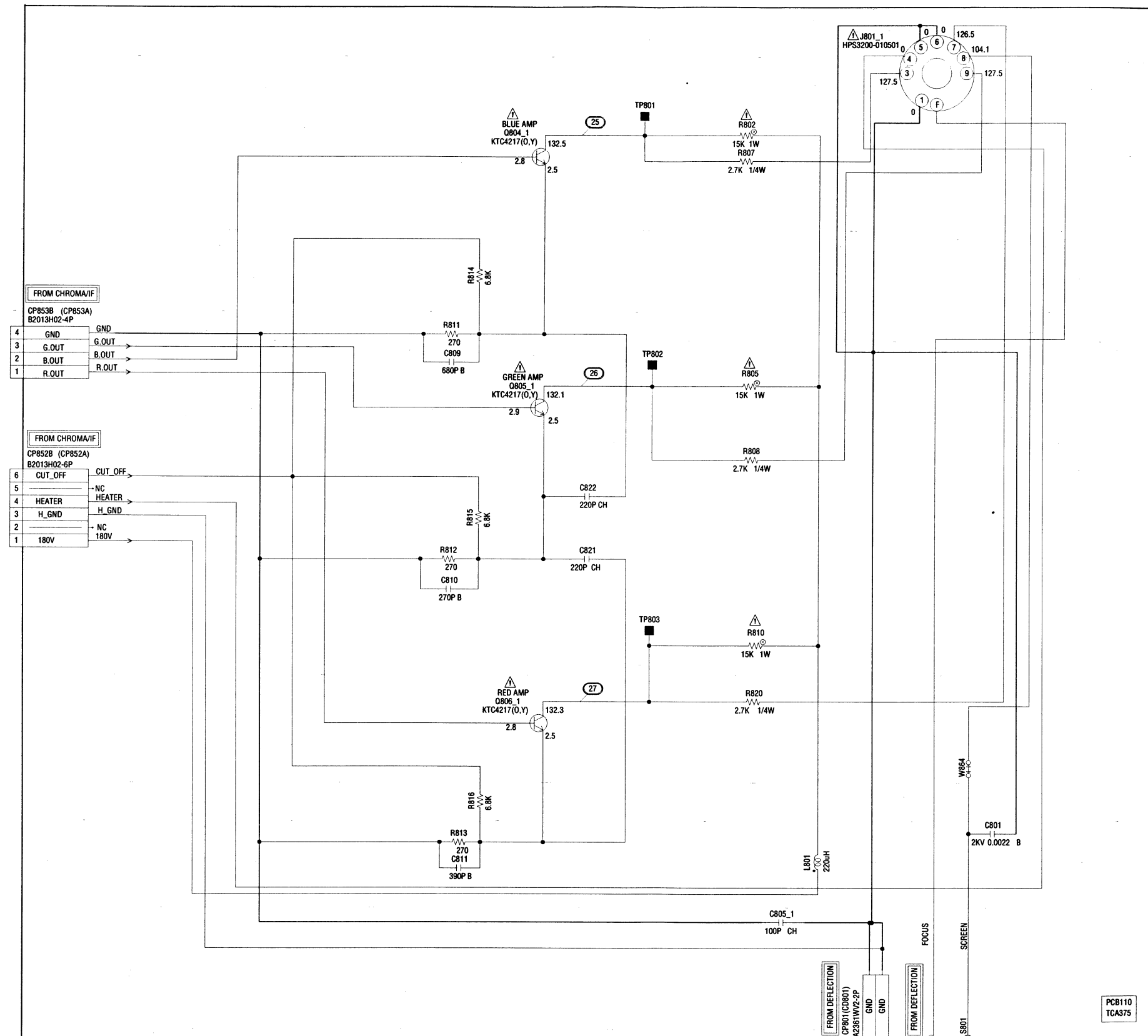
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

CAUTION: SINCE THESE PARTS MARKED BY Δ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN Δ ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CRT SCHEMATIC DIAGRAM (CRT PCB)



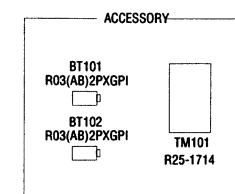
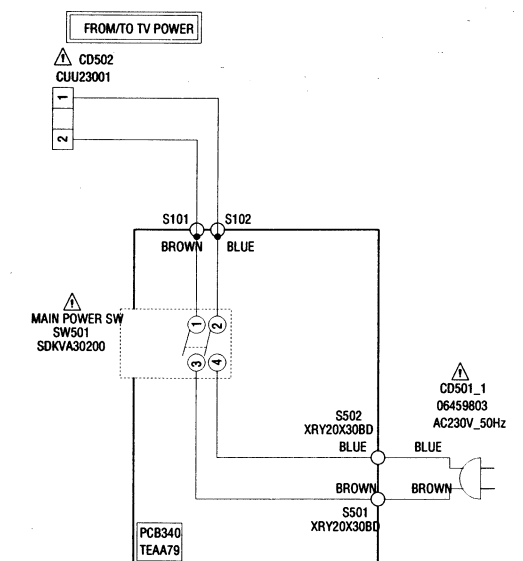
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

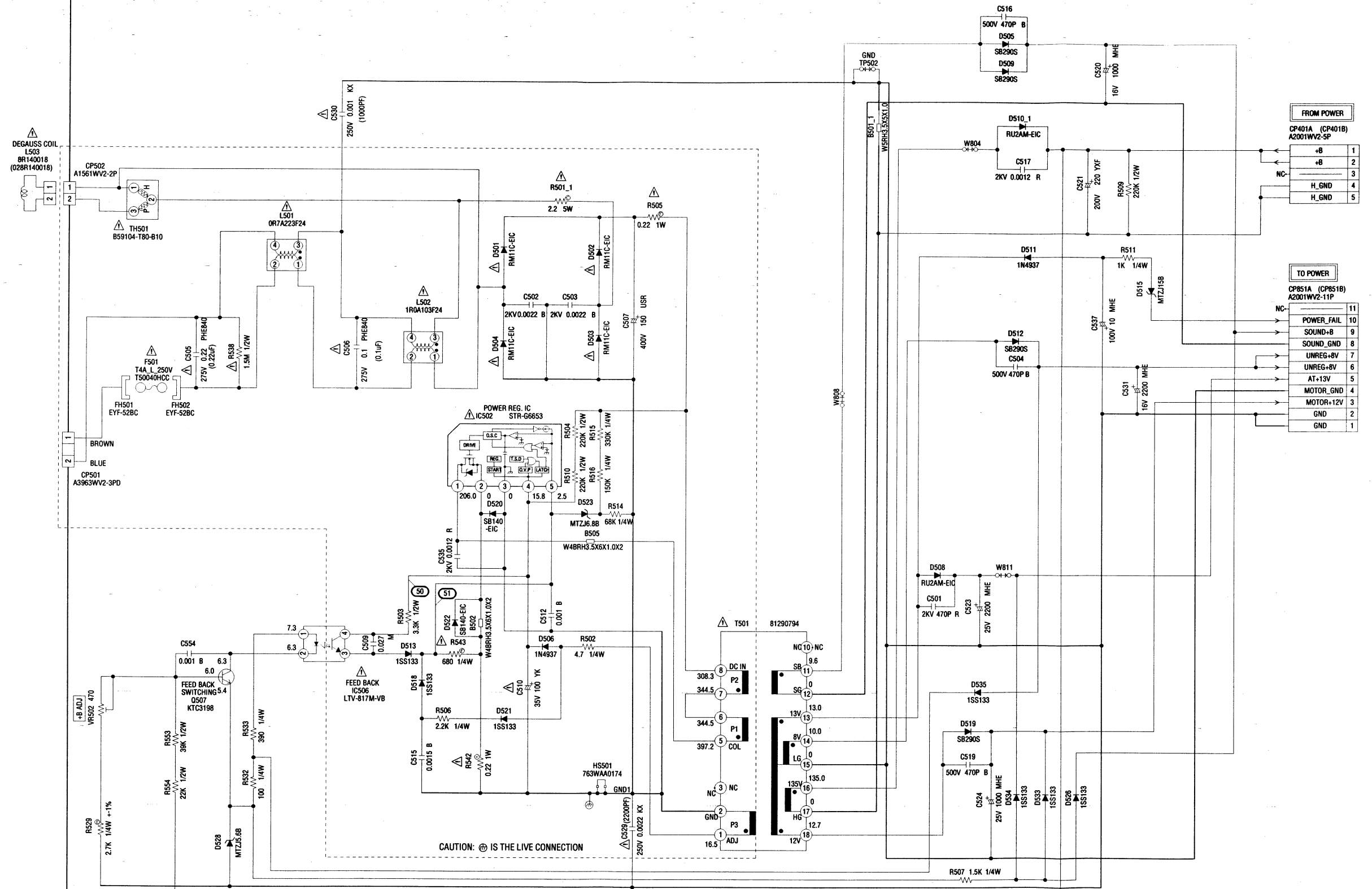
CAUTION: SINCE THESE PARTS MARKED BY ARE
CRITICAL FOR SAFETY, USE ONES
DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ETANT
DANGEREUSES AU POINT DE VUE SECURITE
N'UTILISER QUE CELLES DECRITES
DANS LA NOMENCLATURE DES PIECES.

(POWER SW PCB)



TV POWER SCHEMATIC DIAGRAM (POWER PCB)



NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP
IS NON POLAR ONE.

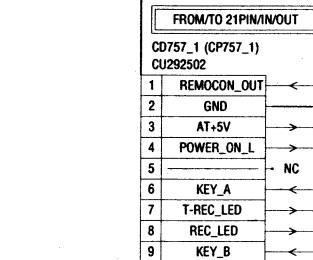
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ⚡ ARE
CRITICAL FOR SAFETY, USE ONES
DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ⚡ ETANT
DANGEREUSES AN POINT DE VUE SECURITE
N'UTILISER QUE CELLS DECRITES
DANS LA NOMENCLATURE DES PIECES.


OPERATION SCHEMATIC DIAGRAM (OPERATION PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL

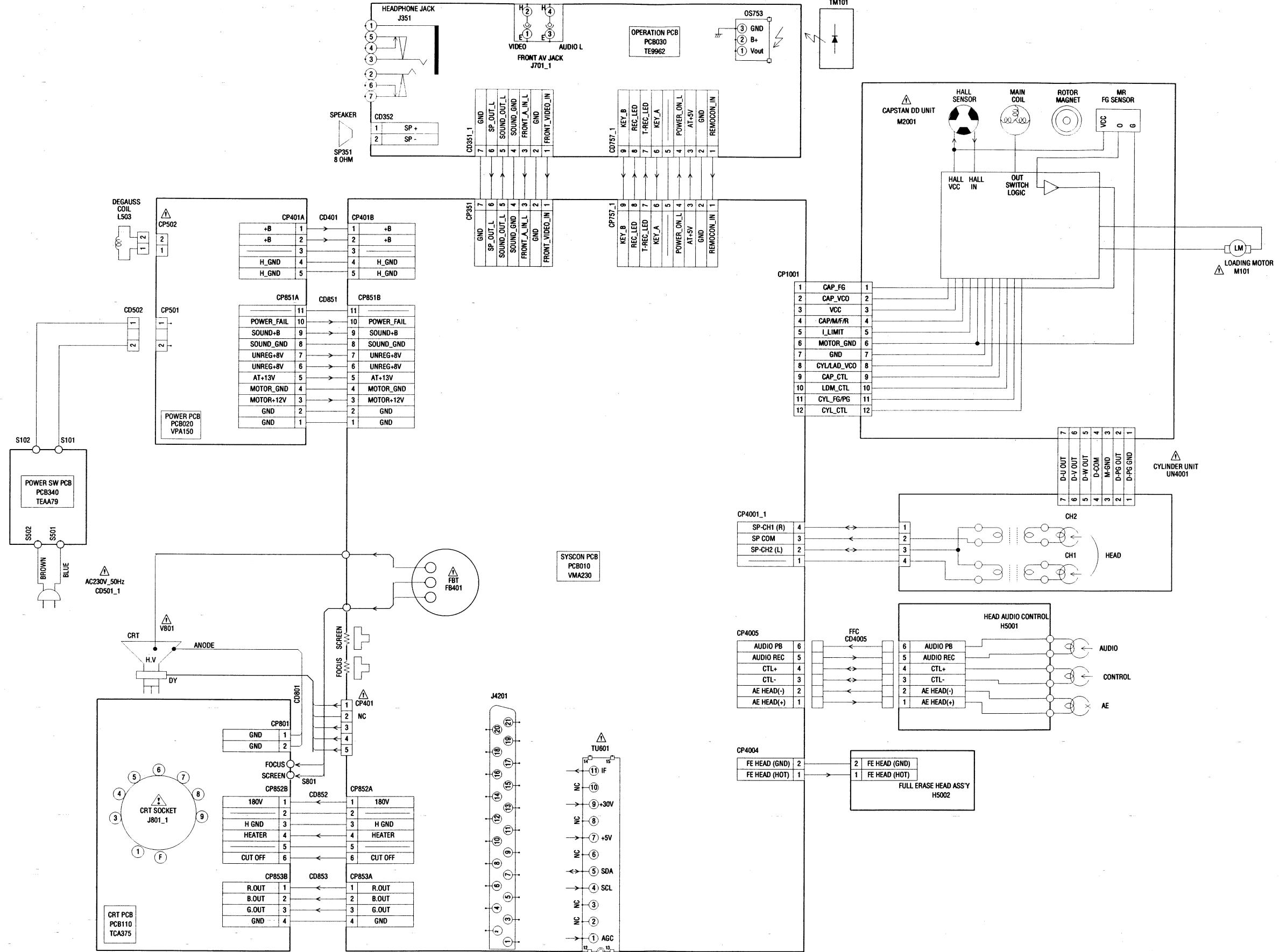
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

◀◀ TUNER VIDEO SIGNAL
◀ AUDIO SIGNAL

INTERCONNECTION DIAGRAM



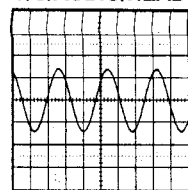
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

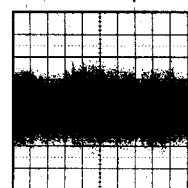
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONLY THOSE DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

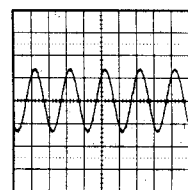
Y/C/AUDIO/HEAD AMP



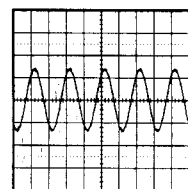
① REC
20.0V 5μs/div



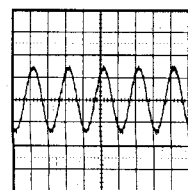
② PB
50mV 5ms/div



③ REC
20.0V 2ms/div

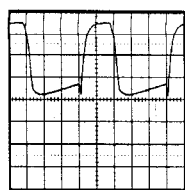


④ REC
0.5V 0.5ms/div

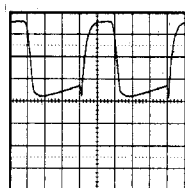


⑤ REC
100mV 0.5ms/div

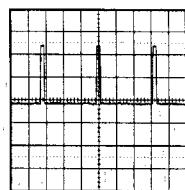
WAVEFORMS



⑥ 1.0V 5μs/div



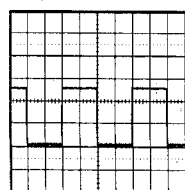
⑦ 1.0V 5μs/div



⑧ REC
2.0V 20μs/div

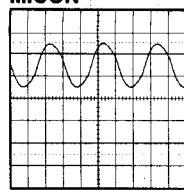


⑨ PB
0.5V 10ms/div

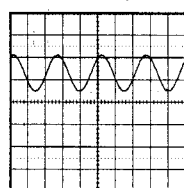


⑩ PB
2.0V 10ms/div

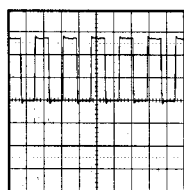
MICON



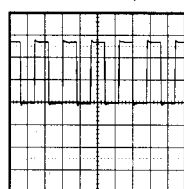
⑪ REC
1.0V 10μs/div



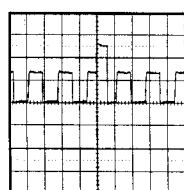
⑫ REC
2.0V 1ms/div



⑬ PB
2.0V 0.5μs/div



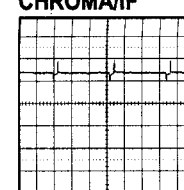
⑭ PB
2.0V 0.5μs/div



⑮ REC
2.0V 1ms/div

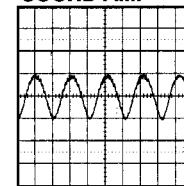
WAVEFORMS

CHROMA/IF



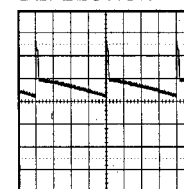
⑲ REC
2.0V 20μs/div

SOUND AMP

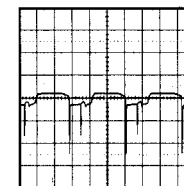


⑲ REC
0.5V 0.5ms/div

DEFLECTION

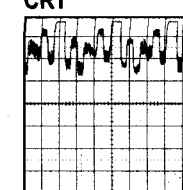


⑲ 20.0V 5ms/div

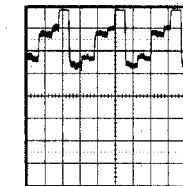


⑲ 5.0V 20μs/div

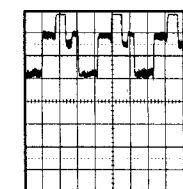
CRT



⑲ 50.0V 20μs/div

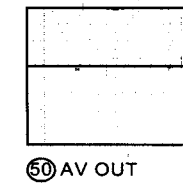


⑲ 50.0V 20μs/div

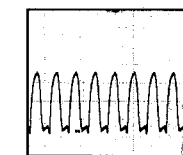


⑲ 50.0V 20μs/div

TV POWER

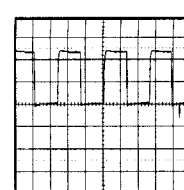


⑲ AV OUT
5V 10ms/div

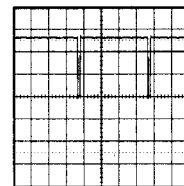


⑲ AV OUT
5V 10ms/div

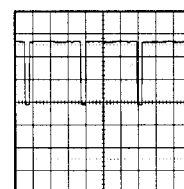
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.



⑲ PB
2.0V 5ms/div

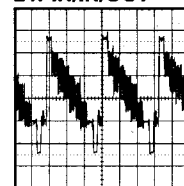


⑲ REC
2.0V 5ms/div

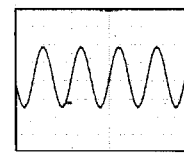


⑲ REC
2.0V 20μs/div

21PIN/IN/OUT



⑲ AV OUT
200mV 20μs/div



⑲ AV OUT
0.5V 500μs/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

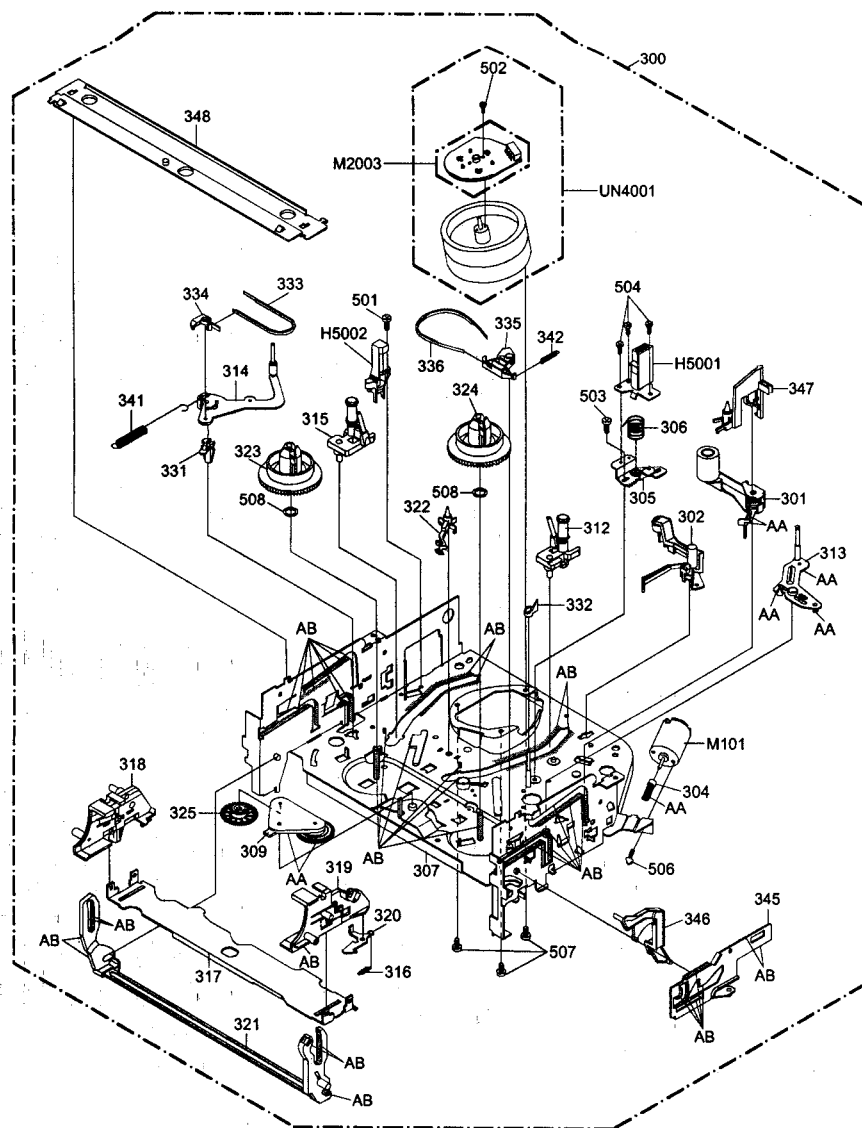
This diagram illustrates the front panel assembly of a television set, showing the following components and their assembly points:

- Top Panel:** Includes the top bezel (115) and top mounting bracket (122).
- Side Panels:** Includes the side bezel (121) and side mounting bracket (120).
- Front Panel:** The main front bezel (113) which houses the speaker grille (114) and the power switch (118).
- Internal Components:**
 - PCB340 (POWER SW PCB):** Power switch printed circuit board, featuring the power switch (SW501) and associated components (112, 119, 205).
 - PCB030 (OPERATION PCB):** Operation printed circuit board, featuring the operation switch (205) and associated components (116, 121, 120).
 - SP351:** Speaker unit, mounted on the front panel (113) via a bracket (206).
- Mounting Hardware:** Various screws (202, 212, 211, 206) and a bracket (J801) are used to secure the panels and components.
- Other Labels:** L503 (cable), V801 (cable), and L504 (cable) are also indicated.

This exploded view diagram illustrates the assembly of the HP-1000 computer system. The main chassis (104) is shown at the bottom, with various mounting points and slots. The power supply unit (PSU) is shown at the top left, with its own mounting bracket (123) and screws (204). The system board (PCB010, SYSCON PCB) is shown in the center, with various components and modules attached. The power board (PCB020, POWER PCB) is shown at the top right, with its own mounting bracket (123) and screws (204). The diagram includes numerous callouts for screws (204, 203, 201, 206, 207, 124, 125, 123, 111, 108, 102, 107, 105, 106, 109, 110, 210, 211), pins (103, 106, 107, 108, 109, 110, 111, 123, 124, 125), and components (TU601, J4201, FB401, 209, 203, 201, 206, 207, 124, 125, 123, 111, 108, 102, 107, 105, 106, 109, 110, 210, 211). The diagram also shows the location of the power switch (103) and the power indicator light (105).

b-2

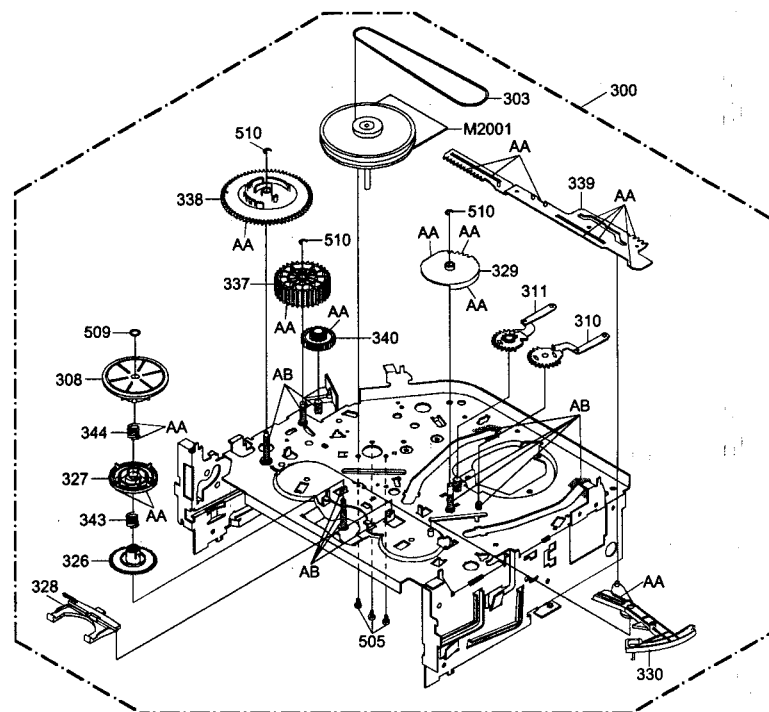
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	MG-33	AB

NOTE: Applying positions AA and AB for the grease are displayed for this section.
Check if the correct grease is applied for each position.

CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	MG-33	AB

NOTE: Applying positions AA and AB for the grease are displayed for this section.
Check if the correct grease is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
101	ASA522N720K	CABINET, FRONT ASSY
102	752WSA0230	SHIELD, CASE HEAD AMP
103	752WSA0238	SHIELD, CASE
104	752WSA0245	PLATE, SHIELD BOTTOM
105	753WSA0118	PLATE, EARTH-SYSCON
106	753WSA0120	PLATE, BOTTOM-EARTH
107	753WSA0142	PLATE, EARTH-SYSCON
108	753WUAA006	SPRING, EARTH HEAD AMP
109	761WPA054	HOLDER, DECK
110	850P700037	HOLDER, LED
111	850P700038	HOLDER, END SENSOR
112	752WSA0259	PLATE, POWER SW
113	701WPJ8484	CABINET, FRONT
114	711WPA0422	PLATE, FRONT
115	722568A004	SHEET, RATING
116	712WPJ8235	FLAT, FLAP
117	713WPA0079	GUIDE, REMOCON
118	7230006762	SHEET, LED
119	735WPA0614	BUTTON, POWER
120	735WPA0507	BUTTON, FRAME
121	743WKA0032	SPRING, FLAP (COMBO)
122	702UPA0194	CABINET, BACK
123	752WSA0240	PLATE, DECK-SHIELD
124	755WPA0027	PLATE, COVER LIGHT
125	8995034000	CORD CLIP UL CO.
126	741WUA0024	SPRING, EARTH
201	8117540B04	SCREW, TAPPING (BO) TRUSS 4x20
202	8117540A84	SCREW, TAPPING (BO) TRUSS 4x18
203	8117540A04	SCREW, TAPPING (BO) TRUSS 4x10
204	8110630A24	SCREW, TAP TITE (P) BRAZIER 3x12
205	8110630A04	SCREW, TAP TITE (P) BRAZIER 3x10
206	8110630B04	SCREW, TAP TITE (P) BRAZIER 3x8
207	8110630B04	SCREW, TAP TITE (P) BRAZIER 3x6
208	8110330B04	SCREW, TAP TITE (P) FLAT 3x8
209	8109130A04	SCREW, TAP TITE (B) WH7 3x10
210	8109630B02	SCREW, TAP TITE (B) BRAZIER 3x8
211	810A130504	SCREW, WASHER (A) M3x5
212	8121F50B84	SCREW, TAPPING (BO) FAI20 FLAT 5x28
---	J85X0200	POLYBAG
---	J5A52201	INSTRUCTION BOOK
---	J5860702	GUARANTEE CARD
---	791MHA0002	LAMIFILM BAG
---	792UHAA011	PACKAGE, TOP
---	792UHAA012	PACKAGE, BOTTOM
---	793UCDA858	GIFT BOX
---	ASA522N975	INSTRUCTION BOOK KIT

CHASSIS REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
300	ASA518N420A	DECK ASSY ASA518N420A	501	8107228804	SCREW, TAP TITE (S) BIND 2.6x8
301	850A400227	PINCH ROLLER BLOCK	502	810A123504	SEMS A M2.3x5.0
302	850A500026	AHC ASSY	503	8107228404	SCREW, TAP TITE (S) BIND 2.6x4
303	850P200290	BELT, CAPSTAN (S)	504	8102128604	SCREW, PAN M2x6
304	850P600581	WORM	505	8108128604	SCREW, TAP TITE (B) PAN 2.6x6
305	850P500083	BASE, AC HEAD	506	810A130404	SCREW, WASHER (A) M3x4
306	850P800324	SPRING, AC HEAD	507	810A126504	SCREW, WASHER (A) M2.6x5
307	850A000459	MAIN CHASSIS ASSY	508	82Q284713N	POLYSLIDER WASHER 2.6x4.7xT0.13
308	850A200089	CLUTCH ASSY	509	82P184505N	POLYSLIDER WASHER (CUT) 1.8x4.5xT0.5
309	850A200090	ARM IDLER ASSY	510	83ETW30000	E-RING 3
310	850A300065	LOADING ARM S UNIT	CD1501	122H071603	CORD JUMPER SMCD-7X151
311	850A300066	LOADING ARM T UNIT	CD1502	122Y021902	CORD JUMPER 2Y021902
312	850A400223	INCLINED BASE T UNIT 3S	H5001	1523D91034	HEAD (AUDIO CONTROL) HVMXA1072A
313	850A400232	P5 ARM ASSY 2	H5002	1543D00213	HEAD (FULL ERASE) HVFHP0032A
314	850A400233	TENSION ARM ASSY (WT)	Δ M101	1596S98001	MOTOR (LOADING) MDB2B66
315	850A400231	INCLINED BASE S UNIT	Δ M2001	1510S98036	CAPSTAN DO UNIT F2QV808
316	850P800358	SPRING, LOCKER	Δ M2003	1589S11014	MICRO MOTOR I20AL03
317	850P900736	CASS, HOLDER	Δ UN4001	A4F310B500	CYLINDER UNIT ASSY A4F310B500
318	850P900748	CASS, SIDE L			
319	850P900749	CASS, SIDE R			
320	850P900739	LOCKER, R			
321	850A900228	LINK UNIT			
322	850P000496	POST, CASS GUIDE			
323	850P200291	REEL, S (S)			
324	850P200292	REEL, T (S)			
325	850P200308	GEAR, IDLER			
326	850P200311	GEAR, CLUTCH			
327	850P200312	GEAR, COUPLING			
328	850P200313	LEVER, CLUTCH			
329	850P300194	GEAR, MAIN LOADING			
330	850P400490	LEVER, TENSION			
331	850P400492	HOLDER, TENSION			
332	850P400520	CAP, P4			
333	850P400532	BAND, TENSION			
334	850P400533	CONNECT, TENSION			
335	850P600573	ARM, BRAKE T			
336	850P600574	BAND, BRAKE T			
337	850P600577	CAM, PINCH ROLLER			
338	850P600578	CAM, MAIN			
339	850P600579	ROD, MAIN			
340	850P600582	GEAR, JOINT			
341	850P800322	SPRING, TENSION			
342	850P800350	SPRING, BRAKE T			
343	850P800355	SPRING, COUPLING			
344	850P800356	SPRING, RING			
345	850P900743	LEVER, LINK			
346	850P900744	LEVER, FLAP			
347	850P900745	CASS, OPENER			
348	850P900746	BRACKET, TOP 3V			

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
RESISTORS			DIODES		
Δ R356	R3X28B3R3J	R.METAL 3.3 OHM 3W	D610	D1V7001330	DIODE,SILICON 1SS133T-77
Δ R430	R3X28B221J	R.METAL 220 OHM 3W	D611	D1V7001330	DIODE,SILICON 1SS133T-77
Δ R447	R655A28B0J	R.FUSE 68 OHM 1/2W	D791	0021E2Q150	LED LTL-4224-031A
Δ R448	R3X181102J	R.METAL OXIDE 1K OHM 1W	D793	0021E2Q150	LED LTL-4224-031A
Δ R450	R655A58R8J	R.FUSE 5.6 OHM 2W	D794	0021E2Q150	LED LTL-4224-031A
Δ R501	RSX2CD2R2J	R.CEMENT 2.2 OHM 5W	D1001	D1V7B7210Q	DIODE SCHOTTKY RB721Q-40 T-77
Δ R505	R635A1R22J	R.FUSE 0.22 OHM 1W	D1002	D2W0111E10	DIODE,SILICON 11E1-EIC
Δ R538	R034K2155J	RC 1.5M OHM 1/2W	D1003	010100320	INFRARED LED LNA2702L010R
Δ R542	R3X181R22J	R.METAL OXIDE 0.22 OHM 1W	D1004	D1V7001330	DIODE,SILICON 1SS133T-77
Δ R543	R635U4681J	R.FUSE 680 OHM 1/4W	D1006	D2WXS81400	DIODE SCHOTTKY SB140-EIC
Δ R802	R3X181153J	R.METAL OXIDE 15K OHM 1W	D1010	D2WXS81400	DIODE SCHOTTKY SB140-EIC
Δ R806	R3X181153J	R.METAL OXIDE 15K OHM 1W	D1021	D1V7001330	DIODE,SILICON 1SS133T-77
Δ R810	R3X181153J	R.METAL OXIDE 15K OHM 1W	D1201	D1V7001330	DIODE,SILICON 1SS133T-77
CAPACITORS			D1202	D2W0111E10	DIODE,SILICON 11E1-EIC
C357	E02L03102M	CE 1000 UF 25V	D1252	D1V7001330	DIODE,SILICON 1SS133T-77
C405	E5EZF3222M	CE 2200 UF 25V	D1261	D1V7001330	DIODE,SILICON 1SS133T-77
C421	E5EZO4102M	CE 1000 UF 35V	D4001	D23U1003A3	DIODE,SCHOTTKY SB10-03A3
C423	PAJ7F3334J	CMPP 0.33 UF 250V PMS	D4210	D1V7001330	DIODE,SILICON 1SS133T-77
C424	PA4NFJ822H	CMPP 0.0082UF 1.25KV or	ICS		
	PA14F9822H	CMPP 0.0082UF 1.6KV ECWH	IC352	10FSP75230	IC AN7523
C450	C03L0R72K	CC 220 PF 2KV R	IC401	10WTD81740	IC TDA8174A
C501	C03L0R72K	CC 220 PF 2KV R	IC502	12BTG66530	IC STR-G6653
C502	C0HHB07H3K	CC 0.0022UF 2KV B	IC506	0002E00610	PHOTO COUPLER LTV-817M-VB
C503	C0HHB07H3K	CC 0.0022UF 2KV B	IC601	10WDE246C0	IC STV2246C
Δ C505	P2472B224M	CMP 0.22UF 275V PHE840	IC1001	11KA97805A	IC KIA7805API
Δ C506	P2472B104M	CMP 0.1 UF 275V PHE840	IC1003	IC7J0311A0	IC R3111N311AC-TR
C507	E52D0H151M	CE 150 UF 400V	IC1004	11KA98R050	IC KIA78R05PI
Δ C510	E02L04101M	CE 100 UF 35V	IC1005	11KA98R050	IC KIA78R05PI
C517	C03L0R72K	CC 0.0012UF 2KV R	IC1006	154F50108A	IC OEC0108A
C521	E62NF3221M	CE 2200 UF 25V	IC1007	11KA98R09A	IC KIA78R09API
C523	E5EZF3222M	CE 2200 UF 25V	IC1099	ASA522N015	IC S-24C08ADPA-01
C524	E5EZF3102M	CE 1000 UF 25V	IC1201	1CKF008B0	IC ET-TV7008B
Δ C529	C83930M33M	CC 0.0022UF 250V	IC1202	10JUF12310	IC MM1231XF
Δ C530	C83930M13M	CC 0.001 UF 250V	IC4001	104F38217F	IC HA118217F
C531	E5EZF3222M	CE 2200 UF 16V	TRANSISTORS		
C535	C03L0R72K	CC 0.0012UF 2KV R	Q351	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
C568	E52H02103M	CE 10 UF 16V	Q403	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
	E50HJ2100M	CE 10 UF 16V	Q405	TC501827Y	TRANSISTOR SILICON 2SC1827 Y(TPE2)
	C0HHB07H3K	CC 0.0022UF 2KV B	Q406	T030028270	TRANSISTOR SILICON 2SD2827LS-CBC11
C1003	E51A0P104Z	CE 0.1 F 5.5V	Q507	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)
DIODES			Q601	TPAAB05001	COMPOUND TRANSISTOR KRA102SRTK
D403	D2W0111E10	DIODE,SILICON 11E1-EIC	Q602	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
D404	D2W0111E10	DIODE,SILICON 11E1-EIC	Q607	TC3030000	TRANSISTOR,SILICON 2SC3000-AA
D405	D2W0111E10	DIODE,SILICON 11E1-EIC	Q608	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
D406	D2W0111E10	DIODE,SILICON 11E1-EIC	Q611	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
D407	D2W0111E10	DIODE,SILICON 11E1-EIC	Q804	TCA0042170	TRANSISTOR SILICON KTC4217(Y,Y)
D411	D2W0111E10	DIODE,SILICON 11E1-EIC	Q805	TCA0042170	TRANSISTOR SILICON KTC4217(Y,Y)
D413	D2W0111E10	DIODE,SILICON 11E1-EIC	Q806	TCA0042170	TRANSISTOR SILICON KTC4217(Y,Y)
Δ D501	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1001	0002700590	PHOTO COUPLER RPI-301
Δ D502	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1002	TNAAC05002	COMPOUND TRANSISTOR KRC103SRTK
Δ D503	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1003	0002700670	PHOTO COUPLER RPI-352Q02
Δ D504	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1004	TNAAC05002	COMPOUND TRANSISTOR KRC103SRTK
D505	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1005	0002700590	PHOTO COUPLER RPI-301
D506	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1006	0000M00390	PHOTO TRANSISTOR ST-304L
D508	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1007	T8YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S
D509	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1009	0002700670	PHOTO COUPLER RPI-352Q02
D510	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1010	TPAAC05002	COMPOUND TRANSISTOR KRA103SRTK
D511	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1015	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
D512	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1016	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
D513	D1V7001330	DIODE,SILICON 1SS133T-77	Q1017	0000M00390	PHOTO TRANSISTOR ST-304L
D515	D97U015018	DIODE,ZENER MTJZ158 T-77	Q1101	TDAT0863Y	TRANSISTOR SILICON KTD863 Y-AT
D518	D1V7001330	DIODE,SILICON 1SS133T-77		TDW700400E	TRANSISTOR SILICON 2SD400E
D519	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1104	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
D520	D2W0111E10	DIODE,SILICON 11E1-EIC	Q1253	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
D521	D1V7001330	DIODE,SILICON 1SS133T-77	Q1262	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
D522	D2W0111E10	DIODE,SILICON 11E1-EIC	Q4001	TCAT032034	TRANSISTOR, SILICON KTC3203 Y-AT
	D2W0111E10	DIODE,SCHOTTKY SB140-EIC	Q4002	TCAT032034	TRANSISTOR, SILICON KTC3203 Y-AT
	D2W0111E10	DIODE,SCHOTTKY SB10-03A3	Q4003	TPAAC05002	COMPOUND TRANSISTOR KRA103SRTK
D523	D97U06R818	DIODE,ZENER MTJZ.68 T-77	Q4004	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)
D528	D1V7001330	DIODE,SILICON 1SS133T-77	Q4005	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)
D528	D97U06R818	DIODE,ZENER MTJZ.68 T-77	Q4006	T8YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S
D533	D1V7001330	DIODE,SILICON 1SS133T-77	Q4007	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
D534	D1V7001330	DIODE,SILICON 1SS133T-77	Q4015	TNAAD05001	COMPOUND TRANSISTOR KRC104SRTK
D535	D1V7001330	DIODE,SILICON 1SS133T-77	Q4018	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R.S
D601	D97U033018	DIODE,ZENER MTJZ338 T-77	Q4202	T8YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S
D602	D2W0111E10	DIODE,SILICON 11E1-EIC	Q4203	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R.S
D603	D1V7001330	DIODE,SILICON 1SS133T-77	Q4205	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R.S

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
TRANSISTORS			VARIABLE RESISTORS		
Q4207	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R.S	VR401	V126202B2T	VOLUME,SEMI FIXED RH0684CS2R
Q4210	T8YJ2412K0	TRANSISTOR,SILICON 2SC2412KT146 R.S	VR402	V126203B2T	VOLUME,SEMI FIXED RH0684CJ3R
			VR502	V116302B2C	VOLUME,SEMI FIXED EVNCVAA03802
COILS & TRANSFORMERS			P.C. BOARD ASSEMBLIES		
L401	021679472K	COIL 4.7 MH	PCB010	ASA522N010K	PCB ASSY VMA230A
L402	0221000011	COIL,LINEARITY ELH5L4112N	PCB020	ASA520N020K	PCB ASSY VPA150A
Δ L501	029700000A1	COIL,LINE FILTER RB721Q-40 T-77	PCB030	ASA522N030K	PCB ASSY TE9962B
	029K000001	COIL,LINE FILTER RB-20871	PCB110	ASA522N110K	PCB ASSY TCA375A
Δ L502	02970000092	COIL,LINE FILTER 1R0A103F24	PCB340	ASA522N340K	PCB ASSY TEA79A
Δ L503	028R140018	COIL,DEGAUSS 8R140018	MISCELLANEOUS		
L602	021375101K	COIL 100 UH	B401	024HT03564	CORE,BEADS W4BRH3.5X6X1
L603	021A6680K	COIL 68 UH	B501	024HT03553	CORE,BEADS W5RH3.5X5X1.0
L604	021673101K	COIL 100 UH	B502	024HT03563	CORE,BEADS W4BRH3.5X6X1.0X2
L605	0216S12R2J	COIL 2.2 UH	B505	024HT03563	CORE,BEADS W4BRH3.5X6X1.0X2
L606	021A682R2K	COIL 2.2 UH	B701	024HT03553	CORE,BEADS W5RH3.5X5X1.0
L607	021A682R2M	COIL 0.27 UH	B702	024HT03563	CORE,BEADS W4BRH3.5X6X1.0X2
L608	021A68120K	COIL 12 UH	B703	024HT03553	CORE,BEADS W5RH3.5X5X1.0
L610	021673101K	COIL 100 UH	B4001	024HT03553	CORE,BEADS W5RH3.5X5X1.0
L611	021673101K	COIL 100 UH	B4201	024HT03564	CORE,BEADS W4BRH3.5X6X1
L612	033700005R	COIL,VIDEO IFT 3700005	B4202	024HT03564	CORE,BEADS W4BRH3.5X6X1
L613	02167F101J	COIL 1 UH	BT101	1412004013	BATTERY,MANGAN R03(AB)2PXGPI
L614	021A681R0M	COIL 1 UH	BT102	1412004013	BATTERY,MANGAN R03(AB)2PXGPI
L801	021673221K	COIL 220 UH	CD351	06CU272502	CORD CONNECTOR CU272502
L1001	021A68120K	COIL 12 UH	CD352	06CU121701	CORD CONNECTOR CU121701
L1202	02167F100J	COIL 10 UH	CD401	06CU251201	CORD CONNECTOR CU251201
L1203	02167F100J	COIL 10 UH	Δ CD501	1206459803	CORD AC BUSH 06459803
L1204	02167F101J	COIL 100 UH	CD502	06CUJ23001	CORD CONNECTOR CUJ23001
L4001	0326230038	COIL,TRAP 2623003	CD757	06CU282502	CORD CONNECTOR CU282502
L4002	02167F101J	COIL 100 UH	CD801	1278140025	BRAIDED WIRE SM1250-001
L4003	021375101K	COIL 100 UH	CD851	06CU281201	CORD CONNECTOR CU281201
L4004	02167F101J	COIL 100 UH	CD852	WDL6036038	FLAT CABLE AWG28 6C BLACK 380MM
	02167B101K	COIL 100 UH	CD853	WBL6028038	FLAT CABLE AWG28 4C BLACK 280MM
L4005	0316260088	COIL,BIAS OSC 1626008	CF601	1022T38R9E	FILTER,SAW SAF38.9MAK2202
L4008	021673102K	COIL 1 MH	CF604	1012T04001	FILTER,CERAMIC TRAP MKT40.4MA110P-TF
L4009	021375101K	COIL 100 UH	CF605	1012T3R503	FILTER,CERAMIC TRAP TP55.5MB-TF21
L4011	021A68120K	COIL 12 UH	CF651	066S270659	CONNECTOR PCB SIDE A2001WV2-5P
L4012	021A6821K	COIL 220 UH	CF652	066S450089	CONNECTOR PCB SIDE A1561WV2-4P
L4013	021673101J	COIL 100 UH	CF6501	066S320419	CONNECTOR PCB SIDE A3063WV2-3PD
L4015	021375101K	COIL 100 UH	CF6502	066S420110	CONNECTOR PCB SIDE A1561WV2-2P
L4016	021A6830K	COIL 38 UH	CF6503	066S180379	CONNECTOR PCB SIDE 06JQ-ST
L4024	021A68100K	COIL 10 UH	CF757	066S290639	CONNECTOR PCB SIDE A2001WV2-2P
L4025	021A68100K	COIL 10 UH	CP601	066S320010	CONNECTOR PCB SIDE A2361WV2-2P
L4026	021A68100K	COIL 10 UH	CD4005	122S061401	CORD JUMPER 1.25X6X138XK
L4202	021673101K	COIL 100 UH	CP1001	06672C0010	CONNECTOR PCB SIDE TMC-J12P-B1
L4203	021A68100K	COIL 10 UH	CP4001	06672A0600	CONNECTOR PCB SIDE TCC-C04X-B2
L4204	021A68100K	COIL 10 UH	CP4004	0667120320	CONNECTOR PCB SIDE TMC-T02X-E1
T401	046009003J	TRANS,HORIZONTAL DRIVE ETH09K148Z	CP4005	066J780029	CONNECTOR PCB SIDE IMSA-860AS-06Z14
Δ T501	0481290794	TRANSFORMER,SWITCHING 81290794	CP401A	066S250629	CONNECTOR PCB SIDE A2001WV2-5P
JACKS			CP401B	067U005049	WIRE HOLDER B2013H02-6P
J351	060G131014	RCA JACK HTJ-035-28A	CP851A	066S280629	CONNECTOR PCB SIDE A2001WV2-11P
J701	060Q401075	RCA JACK AV2-24D-5	CP851B	067U011029	WIRE HOLDER B2013H02-11P
	0602101020	JACK,RCA JPJ3811-01-430	CP852A	067U006049	WIRE HOLDER B2013H02-6P
Δ J801	066X120014	SOCKET,CATHODE RAY TUBE HPS3200-010501	CP852B	067U006049	WIRE HOLDER B2013H02-6P
J4201	063G100042	SOCKET,21PIN 0350, 9882, 05	CP853A	067U004029	WIRE HOLDER B2013H02-4P
SWITCHES			CP853B	067U004029	WIRE HOLDER B2013H02-4P
Δ SW501	0530205017	SWITCH SDKVA30200	CU5011	800WFAA006	CUSHION A
SW751	0504101734	SWITCH,TACT EVQ21505R	CU5011	800WFAA007	CUSHION B
	0504201731	SWITCH,TACT EVQ21505R	CU5012	800WFAA008	CUSHION C
SW791	0504101734	SWITCH,TACT EVQ21505R	EL001	124120301A	EYE LET XRY20X30B0
SW792	0504101734	SWITCH,TACT EVQ21505R	Δ F501	080NT04003	FUSE

ELECTRICAL REPLACEMENT PARTS LIST

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR

CE..... ALUMI ELECTROLYTIC CAPACITOR

CP..... POLYESTER CAPACITOR

CPP..... POLYPROPYLENE CAPACITOR

CPL..... PLASTIC CAPACITOR

CMP..... METAL POLYESTER CAPACITOR

CMPL..... METAL PLASTIC CAPACITOR

CMPP..... METAL POLYPROPYLENE CAPACITOR

SPEC.NO.	M5A5-22N
O/R NO.	U1Y5502